**Voyaging within Aotearoa New Zealand:**

**pre-Contact transport of resources to, from and within Te Tai Tokerau**

**John Booth**

Independent researcher (boothy3@yahoo.co.nz)

**Supplementary Material**

Appendix 1 of the Supplementary Material provides source information for early sites of Te Tai Tokerau (Figure 1), and Appendices 2–13 the distribution of the 11 lithics shown in Figures 2–13.

**Appendix 1.** Sites in Te Tai Tokerau apparently pre-1500, based *not* on rock-type *per se*, but on 1) radiocarbon dating; 2) presence in middens of moa and marine-mammal bone; 3) a wide variety of presumably-locally-acquired fish and shellfish; 4) presence of moa or marine-mammal bone artefacts (particularly fishook componentry); and/or 5) presence of *early-style* artefacts (*sensu* Furey 2004:38ff). Excludes sites thought not to have been first occupied until well into the 15th century. In Location column, 1) upper case indicates locations considered by the author on the evidence available to be multi-year/even 1–2 generations; 2) \* indicates a ‘Moa-hunting site’ of Anderson (1989:111); 3) # indicates a likely Archaic site of Davidson (1982:19); and 4) site number from ArchSite, New Zealand Archaeological Association’s Site Recording Scheme website, where a single site is involved (SRF). Prickett (1989) gives the location of individual old-style adzes in several other parts of the far north of Te Tai Tokerau than indicated. For Mitimiti, many artefacts in Booth Whanau Collection (BWC), Waitangi Museum were deemed ‘early’ by Dr Ian Smith, University of Otago in 2018. Radiocarbon dates from New Zealand Radiocarbon Database (NZRDB; with the notation NZ\*\*\*\*) and reports cited.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Location** |  | **Taxa present in middens** | | | | | **Artefact** | | |
|  |  | **Earliest radiocarbon date of human presence** | **Moa bone** | **Marine-mammal bone** | **Wide variety of finfish** | **Wide variety of shellfish** | ***Cellana denticulata*** | **Moa bone** | **Marine-mammal bone** | **Early-style stone/shell** |
| **1** | **Waikuku Bch/Whareana Bay/Ngakeno Bch** |  | Fairfield (1960:65): Slocombe (1993:33–34, Appendix B) | Taylor (1968:45); Slocombe (1993:33–34, Appendix B) | Slocombe (1993: Appendix B) | Slocombe (1993:33–34, Appendix B) | Coster (1989:52); Slocombe (1993:34) |  |  | Prickett (1989:146) |
| **2** | **TOM BOWLING BAY \***# |  | Coster (1983:187, 1989, 1997:7); Slocombe (1993:32, Appendix B) | Taylor (1968:45); Coster (1983:187, 1989:51, 1997:7); Slocombe (1993:32, Appendix B) | Slocombe (1993: Appendix B) | Slocombe (1993:32) | Coster (1989:52, 62) | Slocombe (1993:32); Booth et al. (2017:37); BWC, Waitangi Museum | Slocombe (1993:32); Booth et al. (2017:37); BWC, Waitangi Museum | Slocombe (1993:40); Booth et al. (2017:37); Campbell et al. (2018:83,99); BWC, Waitangi Museum |
| **3** | **SPIRITS BAY** # |  | Slocombe (1993: Appendix B) | Slocombe (1993: Appendix B) | Slocombe (1993: Appendix B) |  | Coster (1989:52) |  |  |  |
| **4** | **Te Werahi Bay** # |  | Slocombe (1993: Appendix B) | Slocombe (1993: Appendix B) | Slocombe (1993: Appendix B) |  | Coster (1989:52) |  |  | Slocombe (1993:32, Appendix B) |
| **5** | **Twilight Bch** # | CRA 1005 ± 33 (95% 660-535 BP); (Slocombe 1993:15) (NZ6579); 1285–1414 (Turner 2000:338) | Slocombe (1993: Appendix B) | Taylor (1984:224);  Slocombe (1993: Appendix B) |  |  | M02/162 |  | Taylor (1984:226) | Taylor (1984:53); Prickett (1989:146)  Slocombe (1993:35,39) |
|  | **‘North Cape’** |  |  |  |  |  |  |  |  | Turner (2000:337,428) |
| **6** | **(Mainly northern) Ninety Mile Bch** | Multiple sites, CRA 756–816 (Coster 1989:56) | Coster (1989) Slocombe (1993:30, Appendix B) | Coster (1989); Slocombe (1993:30, Appendix B) | Slocombe (1993: Appendix B) |  |  | Slocombe (1993:30) | Slocombe (1993:30) | Coster & Johnston (1976:263); Moore et al. (1979:60-61); Prickett (1989:146);  Coster (1989:52; 1997:10–11,25) |
|  | **‘Te Aupouri’** |  |  |  |  |  |  |  |  | Turner (2000:428) |
| **7** | **Henderson Bay** # | CRA 903±57 (NZ4608); CRA 819±56 (NZ4609) | Coster & Johnston (1976:8) | Coster & Johnston (1976:8) |  | Coster & Johnston (1976:8) | Coster & Johnston (1976:8) |  |  |  |
| **8** | **HOUHORA \*#**  (N03/59) | Early to mid 14th century (Petchey 2000:104: Furey 2002:35) | Roe (1967); Furey (2002) | Roe (1967); Furey (2002) | Furey (2002) | Furey (2002) |  | Roe (1967); Furey (2002) | Roe (1967); Furey (2002) | Roe (1967); Prickett (1989:146); Furey (2002) |
| **9** | **East Bch** |  |  |  | Douglas & Fredericksen (1985:22) | Douglas & Fredericksen (1985:22) |  |  |  | Douglas & Fredericksen (1985:1) |
|  | **Far North’s ‘East Coast + Mt Camel’** |  |  |  |  |  |  |  |  | Turner (2000:428) |
| **10** | **Karikari Bay** |  |  | Phillips & Foley (1978:13) |  |  |  |  |  | Prickett (1989:146) |
| **11** | **Maitai Bay \*** |  | Millener (1981) in Anderson (1989:110) |  |  |  |  |  |  |  |
|  | **Far North’s ‘Sth East Coast’** |  |  |  |  |  |  |  |  | Turner (2000:428) |
| **12** | **TAUROA POINT** (N05/302) | 14th century (Allen 2006:19) |  | Allen (2006:51) |  |  |  | Allen (2006:28,51) | Allen (2006:28,51) | Allen (2006); Phillipps et al. (2016) |
|  | **Far North’s ‘Sth West Coast’** |  |  |  |  |  |  |  |  | Turner (2000:428) |
| **13** | **Tauranga Bay**  (P04/639) | 14th century (Campbell et al. 2018:84) |  | Campbell et al. (2018:84) | Campbell et al. (2018:84) | Campbell et al. (2018:84) |  |  |  |  |
| **14** | **Cavalli Is** | ‘Archaic’ middens (Maingay 1986:46,48) | Maingay (1986:48, but may be dog) | Maingay (1986:4) |  |  |  |  |  |  |
| **15** | **Patunui**  (P05/986) | 1400–1500 (McCoy & Ladefoged 2012:3) |  |  | McCoy & Ladefoged (2012:4) |  |  |  |  |  |
| **16** | **Wairoa Bay**  (P05/853) | ¬1400 (Best 2003:1) | Best (2003:24) | Best (2003:23)(?) |  | Best (2003:26) |  |  |  |  |
| **17** | **Otehei, Hahangarua, Opunga bays** | ¬1300 (Peters 1975; Anderson 1991; NAR 1997; Goddard 2012) | NAR (1997) | NAR (1997) |  | NAR (1997) |  |  |  |  |
| **17 cont.** | **MANGAHAWEA BAY** (Q05/682) | Early to mid 1300s (Robinson et al. 2019:45) | Robinson et al. (2019) | Robinson et al. (2019) | James Robinson (pers. comm. 2020) | James Robinson (pers. comm. 2020) | Robinson et al. (2019:46) | James Robinson (pers. comm. 2020) |  | James Robinson (pers. comm. 2020) |
| **18** | **Manawaora Bay** |  | NAR (2011:8) |  |  |  |  |  |  | Best (1996:19); NAR (2011:8) |
|  | **Mid North’s ‘East Coast’** |  |  |  |  |  |  |  |  | Turner (2000:428) |
| **19** | **MITIMITI** |  |  |  |  |  |  | BWC, Waitangi Museum | BWC, Waitangi Museum | BWC, Waitangi Museum |
| **20** | **Kokohuia**  (O06/317) | 1400s (Taylor nd; Campbell et al. 2018:83) | Taylor nd | Taylor nd | Taylor nd | Taylor nd |  |  |  | Taylor nd |
| **21** | **Waipoua Forest**  (O06/290) | CRA 930±45 (Wk1083); 1265–1405 (SRF) |  |  |  |  |  |  |  | O06/290 (SRF) |
| **22** | **Te Akau Bay** (unrecorded midden) |  |  |  | Author’s unpubl. obs. | Author’s unpubl. obs. | Author’s unpubl. obs. |  |  |  |
| **23** | **Bland Bay** | ‘Archaic’ midden (Maingay 1986:128) | Author’s unpubl. obs. | Author’s unpubl. obs. | Author’s unpubl. obs. | Author’s unpubl. obs. |  | Author’s unpubl. obs. | Author’s unpubl. obs. |  |
| **24** | **Ngungaru Bay, Pataua, Taiharuru Bay, Awahoa Bay, ‘Stockyard Bay’** |  | Thorne (1875); Maingay (1986:135) | Thorne (1875) | Thorne (1875) | Thorne (1875) |  |  |  | Thorne (1875) |
| **25** | **Ocean Bch** |  | Thorne (1875): Carpenter (2012) | Carpenter (2012) | Carpenter (2012) | Carpenter (2012) |  | Carpenter (2012) | S561 BWC; Carpenter (2012) | Carpenter (2012) |
| **26** | **Smugglers Bay**  (Q07/87) |  | Nevin (1984:63); Carpenter (2012) | Nevin (1984:63); Carpenter (2012) | Nevin (1984:63) | Nevin (1984:63) | Nevin (1984:63) | Nevin (1984:63) | Nevin (1984:63) | Nevin (1984:63) |
| **27** | **North Kaipara Hd** |  |  |  |  |  |  |  |  | Coster (1980:6) |
|  | **Mid North’s ‘ Kaipara Heads’ & Inner Kailara Harb.’** |  |  |  |  |  |  |  |  | Turner (2000:428) |

**Appendix 2.** References citing finds of **Pungaere/Kaeo** obsidian, assigned using X-ray fluoresence, within Te Tai Tokerau (arabic numerals) and beyond Te Tai Tokerau (alphabetic), together with likely era. Indicative age is the date-range/period of the layer, provided by the author(s), in which the item was located; italics indicate undated sites from Figure 1 presumed to be pre-1500.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Apparent era (dark shading, mainly pre-1500; light shading, mainly post-1500; medium shading, transitional)** | | **Lithic assignment** | **Location** |
|  | **Indicative age (page)** | **Method (page)** | **Method (page)** |  |
| *1, Booth et al. (2018:13)* | *?* | *-* | *XRF (13)* | *Tom Bowling Bay* |
| 2, L. Furey pers. comm. | Early | *-* | XRF | Twilight Bay |
| 3, Moore & Coster (2015:8) | Late 15th to 18th centuries (1,13) | Radiocarbon (5) | XRF (8,11) | Ninety Mile Beach |
| 4, Moore & Coster (2015:15) | ? | - | XRF (presumably) (15) | Kowhai Beach |
| 5, Furey (2002:108) | 1300s (36) | Radiocarbon (37) | XRF (108, line 14) | Houhora |
| 6, Phillipps et al. (2016:113,118) | ~late 14th century (107) | Radiocarbon (in Allen 2006:50) | XRF (108) | Tauroa Point |
| 7, Booth et al. (2018:13) | ? | - | XRF (13) | Berghan Point to Tikitiki |
| 8, Booth et al. (2018:13,17) | ? | - | XRF (13,17) | Mainly W and NW Bay of Islands |
| 9, McCoy et al. (2019) | 1400–1500 (McCoy & Ladefoged 2012:3) | Radiocarbon (McCoy & Ladefoged 2012:3) | XRF (McCoy & Ladefoged 2012:6) | Patunui |
| 10, Booth et al. (2018:17) | ? | - | XRF (17) | SE Bay of Islands |
| 11, McCoy et al. (2019) | ? | - | XRF | Mangahawea Bay, Paeroa Pa |
| 12, McCoy et al. (2010:175) | Classic Period (175) | Taxa present (175) | XRF (175) | Urupukapuka; also McCoy et al. (2019) |
| 13, McCoy et al. (2014:472) | 1400–1600 (472) | Radiocarbon (469) | XRF (470) | Pouerua |
| 13, McCoy et al. (2014:472) | 1600–1769 (472) | Radiocarbon (469) | XRF (470) | Pouerua |
| 14, McCoy et al. (2010:177) | Classic Period (177) | Radiocarbon (presumably) (177) | XRF | Pouerua, based on Seelenfreund & Bollong (1989) assignments |
| *15, Booth et al. (2018:13)* | *?* | *-* | *XRF (13)* | *Mitimiti* |
| 16, Turner et al. (2010:94) | 1500–1700 (ii) | Radiocarbon (ii) | XRF (89) | Puwera; also Hoare (nd) & Kerrigan (2008) |
| 17, Harris (2012:9) | Late 15th to mid-17th centuries (11) | Radiocarbon (11) | XRF (9) | Midden B, Urquharts Bay |
| 18, Moore (2012:23) | ? | - | XRF (presumably) | North Kaipara Head |
| a, Spring-Rice (1978:1) | ? | - | XRF (1) | South Kaipara Head |
| b, Cruickshank (2011) | Post-1500 | Radiocarbon | XRF | Auckland; details in Ladefoged et al. (2019:4) |
| c, Campbell & Hudson (2011:59-60) | 1620–1870 (39) | Radiocarbon (39) | XRF (59) | Auckland Airport |
| d, Phillips & Green (1991:169) | ? | - | XRF (presumably) (169) | Hauraki Plains |
| e, Walter & Brooks (2014:24) | Archaic | Radiocarbon | XRF (24) | Wairau Bar (based on Knox 2011) |
| f, Mosley & McCoy (2010:10) | ‘Archaic’ (6) | Radiocarbon (presumably) | XRF | Wakanui; also McCoy et al (2019) |
| g, McCoy & Robles (2016:289) | ‘Early Period’ (286) | Radiocarbon (presumably) | XRF (289) | Waitaki River mouth; also McCoy et al. (2019) |
| h, McCoy & Robles (2016:289) | ‘Early Period’ (286) | Radiocarbon (presumably) | XRF (289) | Long Beach; also McCoy et al. (2019) |

**Appendix 3.** References citing finds of ‘Northland’ (**Pungaere/Kaeo** or **Huruiki**)obsidian, assigned using X-ray fluoresence, within Te Tai Tokerau and beyond Te Tai Tokerau, together with indicative era. Note there was probably other Northland-sourced obsidian determined by Seelenfreund & Bollong (1989:178–180) (eg, ‘Northland or Mayor Island’). Indicative age is the centre-point of the estimated age of the layer in which the item was located. The lower table gives the location numbers from Seelenfreund & Bollong’s (1989:171) map of sites sampled.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Apparent era (dark shading, mainly pre-1500; light shading, mainly post-1500; medium shading, transitional)** | | **Lithic assignment** | **Source/Location** |
|  | **Indicative age (page)** | **Method (page)** | **Method (page)** |  |
| □, Seelenfreund & Bollong (1989:180) | 630 BP and older (180)  Early (~1320) | Radiocarbon (173–174) | XRF (174) | Table 3 |
| Δ, Seelenfreund & Bollong (1989:179) | 630-350 BP (179)  Mid (~1320–1600) | Radiocarbon (173–174) | XRF (174) | Table 2 |
| Օ, Seelenfreund & Bollong (1989:178) | 350 BP to present (178)  Late (post-1600) | Radiocarbon (173–174) | XRF (174) | Table 1 |
| Օ, Anderson (1983:17) | 18th century (2) | Items found (2) | XRF (16) | Mapoutahi Pa (nr Blueskin Bay) (48) |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Map No.** | **Location** | **Map No.** | **Location** | **Map No.** | **Location** | **Map No.** | **Location** |
| 1 | Houhora | 13 | Kauri Pt Swamp (Katikati) | 25 | Paremata | 41 | Long Beach (Otago Peninsula) |
| 2 | Pouerua | 16 | Raglan | 26 | Tahunanui | 45 | Tiwai Pt |
| 3 | Harataonga (Great Barrier I | 17 | Raglan | 28 | Wairau Bar | 47 | Heaphy R mouth |
| 8 | Skippers Ridge (Opito Bay, Coromandel) | 19 | Mangakaware/Ngarato (west Waikato) | 34 | Redcliffs | 48 | Blueskin Bay |
| 9 | Hahei | 20 | Tokoroa | 35 | Waitaki R mouth |  |  |
| 10 | Hot Water Bch | 23 | Maiora (west Waikato) | 39 | Shag Point |  |  |
| 11 | Tairua | 24 | Hingaimotu (south Taranaki) | 39 | Shag Point |  |  |

**Appendix 4.** References citing finds of **Huruiki** obsidian, assigned using X-ray fluoresence, within Te Tai Tokerau (Arabic numerals) and beyond Te Tai Tokerau (alphabetic), together with likely era. Indicative age is the date-range/period of the layer, provided by the author(s), in which the item was located; italics indicate undated sites from Figure 1 presumed to be pre-1500.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Apparent era (dark shading, mainly pre-1500; light shading, mainly post-1500; medium shading, transitional)** | | **Lithic assignment** | **Location** |
|  | **Indicative age (page)** | **Method (page)** | **Method (page)** |  |
| *1, Moore (2012:22-24)* | *?* | *-* | *XRF (22)* | *Waikuku Bch* |
| 2, Moore & Coster (2015:8) | Late 15th to 18th century (1) | Radiocarbon (4) | XRF (8,11) | Ninety Mile Bch |
| 3, Phillipps et al. (2016:113,118) | ~late 14th century (107) | Radiocarbon (in Allen 2006:50) | XRF (108) | Tauroa Point |
| 4, McCoy et al. (2019) | ? | - | XRF | Urupukapuka I |
| 5, McCoy et al. (2010:175,178) | Classic Period (175) | Taxa present (175) | XRF (178) | Urupukapuka I |
| 6, McCoy et al. (2019) | ? | - | XRF | Mangahawea, Paeroa Pa |
| 7, Booth et al. (2018:15) | ? | - | XRF (13,15) | Bay of Islands |
| 8, McCoy et al. (2010:177,178) | Classic Period (177) | Radiocarbon presumably (177) | XRF | Pouerua, based on Seelenfreund & Bollong (1989) assignments |
| 9, McCoy et al. (2014:472) | 1400–1600 (469) | Radiocarbon (469) | XRF (470) | Pouerua |
| 9, McCoy et al. (2014:472) | 1600–1769 (469) | Radiocarbon (469) | XRF (470) | Pouerua |
| 10, Hill & Campbell (2009:7) | 1650–1810 (9) | Radiocarbon (9) | XRF (7) | Oakura |
| 11, McCoy & Carpenter (2014:8) | 1500–1769 (1) | Radiocarbon (2) | XRF (4) | Helena Bay |
| 12, Robinson (2016:317) | Probably late (317) | Mainly the near-absence of Mayor I obsidian (317) | XRF (28) | Poor Knights Is |
| 13, Prince (2010:15) | ? | - | XRF (17) | Ngunguru |
| 14, Phillips & Druskovich (2009, Addendum:6) | 1520–1650 (29) | Radiocarbon (29) | XRF (Addendum:6) | Urquharts Bay |
| 15, Harris (2012:9) | Late 15th to mid-17th centuries (11) | Radiocarbon (11) | XRF (9) | Urquharts Bay |
| 16, McCoy & Carpenter (2014:8) | Late Period (post-1500) (1) | Taxa present (2) | XRF (4) | Bream Head |
| 17, Turner et al. (2010:94) | 1500–1700 (ii) | Radiocarbon (ii) | XRF (89) | Puwera; also Hoare (nd) & Kerrigan (2008) |
| a, Spring-Rice (1996:221) | ‘Archaic’ | Mainly artefacts present | XRF (221) | South Kaipara Head |
| b, Spring-Rice (1978:1,5) | ? | - | XRF (1,5) | South Kaipara Head |
| c, Reeves & Ward (1976:279–280) | ? | - | XRF (279) | Otakanini Pa (near Parakai) |
| d, McCoy & Carpenter (2014:8) | Late Period (post-1500) (1) | Radiocarbon (2) | XRF (4) | Mt Wellington |
| e, Fox (1982:208) | 1430–1620 (208) | Radiocarbon (208) | XRF (208) | Mount Roskill |
| f, McCoy et al. (2019) | pre-1500 (4) | Radiocarbon (3) | XRF (1) | Waiheke I. (Date based on Ladefoged et al. 2019) |
| g, Campbell & Hudson (2011: 59–60) | 1620–1870 (39) | Radiocarbon (39) | XRF (59) | Auckland Airport |
| h, McCoy et al. (2019) | ? | - | XRF | Otuatua Stonefields |
| i, Ward (1974:13) | Early | Radiocarbon | XRF (13) | N38/24 Motutapu I (also see Reeves & Ward [1976:279]) |
| j, Reeves & Ward 1976:279) | ‘Middle Phase’ | Radiocarbon | XRF | N38/37 Motutapu I, drawing on other studies |
| k, Sheppard et al. (2011:55) | ? | - | XRF (52) | Ponui I. |
| l, Harsant (1985:23) | Archaic (Harsant 1983) | Radiocarbon (Harsant 1983) | XRF (22) | Hahei (possibly also in Seelenfreund & Bollong 1989) |
| m, McCoy et al. (2019) | ? | - | XRF | Great Mercury I |
| n, Walter & Greig (2017:20) | Possibly 14th to early 15th century (20) | Associated items | XRF (20) | Eastland Port (but could be from Hahei) |
| o, Leach (1978:395); | Early Phase (393) | Radiocarbon presumably (393) | XRF (394,395) | Cape Palliser (also Reeves & Ward [1976] & Leach & Anderson [1978]) |
| p, Reeves & Ward (1976:282) | Late Phase (282) | Various | XRF (279) | Palliser Bay, drawing on several sources |
| q, Anderson (1983:17) | 18th century (2) | Items found (2) | XRF (16) | Mapoutahi Pa (nr Blueskin Bay) |
| r, Reeves & Ward (1976:282) | Late Phase (282) | Various | XRF (279) | Sandhill Point, drawing on several sources |

**Appendix 5.** References citing finds of **‘Poor Knights Islands’** obsidian, assigned using X-ray fluoresence, within Te Tai Tokerau (Arabic numerals) and beyond Te Tai Tokerau (alphabetic), together with likely era. Indicative age is the date-range/period of the layer, provided by the author(s), in which the item was located.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Apparent era (dark shading, mainly pre-1500; light shading, mainly post-1500; medium shading, transitional)** | | **Lithic assignment** | **Location** |
|  | **Indicative age (page)** | **Method (page)** | **Method (page)** |  |
| 1, Moore & Coster (2015:8, 11) | Late 15th to 18th centuries (1) | Radiocarbon (4) | XRF (8, 11) | Ninety Mile Beach |
| 2, Booth et al. (2018:15) | ? | - | XRF (15) | Whiorau Bay |
| 3, Robinson (2016:317) | Probably late period (317) | Mainly near-absence of Mayor island obsidian (317) | XRF (28) | Poor Knights Is |
| 4, Moore (2012:24) | ? | - | XRF (24) | Poor Knights Is |
| 5, Campbell & Trilford (2019:8) | Mid 15th to mid 16th centuries (5) | Radiocarbon (5) | XRF (8) | Urquharts Bay |
| a, Phear et al. (2019:i) | Early (?) 14th to 19th centuries (ii) | Radiocarbon (ii) | XRF (i) | Matakana |
| b, Campbell et al. (2019:32) | 1430–1485 (38) | Radiocarbon (30) | XRF (32) | Auckland |

**Appendix 6.** References citing finds of **Fanal Island** obsidian, assigned using X-ray fluoresence, within Te Tai Tokerau, together with likely era. Indicative age is the date-range/period of the layer, provided by the author(s), in which the item was located.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Apparent era (dark shading, mainly pre-1500; light shading, mainly post-1500; medium shading, transitional)** | | **Lithic assignment** | **Location** |
|  | **Indicative age (page)** | **Method (page)** | **Method (page)** |  |
| 1, Moore & Coster (2015:8) | Late 15th to 18th centuries (1) | Radiocarbon (4) | XRF (8, 11) | Southern Ninety Mile Bch |
| 2, Booth et al. (2018:15) | ? | - | XRF (15) | Whiorau Bay |
| 3, McCoy et al. (2010:177) | Classic Period (177) | Radiocarbon (presumably) (177) | XRF | Pouerua; based on Seelenfreund & Bollong (1989) assignment |
| 4, McCoy et al. (2014:472) | 1400–1600 (472) | Mainly radiocarbon (469) | XRF (469) | Pouerua |
| 5, Hill & Campbell (2009:7) | 1650–1810 (9) | Radiocarbon (9) | XRF (7) | Oakura |
| 6, Moore (2012:24) | ? | - | XRF (24) | Poor Knights Is |
| 7, Robinson (2016:317) | Probably late period (317) | Mainly near-absence Mayor I obsidian (317) | XRF (28) | Poor Knights Is |
| 8, McCoy & Carpenter (2014:8) | 1500–1769 (1, 2) | Radiocarbon + taxa (2) | XRF (4) | Bream Head |
| 9, Harris (2012:9) | Late 15th to mid-17th centuries (11) | Radiocarbon (11) | XRF (9) | Urquharts Bay |
| 10, Moore (2012:24) | ? | - | XRF (24) | Hen and Chicken Is |

**Appendix 7.** References citing finds of **Great Barrier Island** obsidian, assigned using X-ray fluoresence, within Te Tai Tokerau, together with likely era. Indicative age is the date-range/period of the layer, provided by the author(s), in which the item was located.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Apparent era (dark shading, mainly pre-1500; light shading, mainly post-1500; medium shading, transitional)** | | **Lithic assignment** | **Location** |
|  | **Indicative age (page)** | **Method (page)** | **Method (page)** |  |
| 1, Moore & Coster (2015:8) | Late 15th to 18th centuries (1) | Radiocarbon (4) | XRF (8, 11) | Southern Ninety Mile Bch |
| 2, McCoy et al. (2010:177) | Classic Period (177) | Radiocarbon (presumably) (177) | XRF | Pouerua; based on Seelenfreund & Bollong (1989) assignment |
| 3, McCoy et al. (2014:472) | 1600–1769 (472) | Radiocarbon (469) | XRF (470) | Pouerua |
| 4, McCoy et al. (2019) | ? | - | XRF | Mangahawea & Urupukapuka |
| 5, Robinson (2016:317) | Probably late period (317) | Mainly near-absence Mayor I obsidian (317) | XRF (28) | Poor Knights Is |
| 6, Harris (2012:9) | Late 15th to mid-17th centuries (11) | Radiocarbon (11) | XRF (9) | Urquharts Bay |
| 7, Phillips & Druskovich (2009, Addendum:6) | 1520–1650 (29) | Radiocarbon (29) | XRF (Addendum:6) | Urquharts Bay |
| 8, McCoy & Carpenter (2014:8) | 1500–1769 (1, 2) | Radiocarbon + taxa (2) | XRF (4) | Bream Head |
| 9, Turner et al. (2010:94) | 1500–1700 (ii) | Radiocarbon (ii) | XRF (89) | Puwera; also Hoare (nd:47) & Kerrigan (2008) |

**Appendix 8.** References citing finds of **Coromandel (Hahei, Cooks Beach, Tairua, ‘Coromandel’)** obsidian, assigned using X-ray fluoresence, within Te Tai Tokerau, together with likely era. Indicative age is the date-range/period of the layer, provided by the author(s), in which the item was located; italics indicate undated sites from Figure 1 presumed to be pre-1500.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Apparent era (dark shading, mainly pre-1500; light shading, mainly post-1500; medium shading, transitional)** | | **Lithic assignment** | **Location** |
|  | **Indicative age (page)** | **Method (page)** | **Method (page)** |  |
| *1, Moore (2012:22)* | *?* | *-* | *XRF (22)* | *Waikuku Bch* |
| 2, Moore & Coster (2015:8) | Late 15th to 18th (1) | Radiocarbon (4) | XRF (8, 11) | Ninety Mile Bch |
| 3, Phillipps et al. (2016:113,118) | ~late 14th century (107) | Radiocarbon (in Allen 2006:50) | XRF (108) | Tauroa Point |
| 4, Booth et al. (2018:13) | ? | - | XRF (13) | Whangaroa |
| 5, McCoy et al. (2019) | ? | - | XRF | Paeroa Pa |
| 6, McCoy et al. (2010:175) | Classic Period (175) | Taxa present (175) | XRF (175) | Urupukapuka |
| 7, Booth et al. (2018:14,15) | ? | - | XRF (13,15) | Whiorau Bay |
| 8, McCoy et al. (2010:177) | Classic Period (177) | Radiocarbon (presumably) (177) | XRF | Pouerua; based on Seelenfreund & Bollong (1989) assignment |
| 9, Hill & Campbell (2009:7) | 1650–1810 (9) | Radiocarbon (9) | XRF (7) | Oakura |
| 10, Phillips & Druskovich (2009, Addendum:6) | 1520–1650 (29) | Radiocarbon (29) | XRF (Addendum:6) | Urquharts Bay |
| 11, Harris (2012:9) | Late 15th to mid-17th centuries (11) | Radiocarbon (11) | XRF (9) | Urquharts Bay |
| 12, Turner et al. (2010:94) | 1500–1700 (ii) | Radiocarbon (ii) | XRF (89) | Puwera; also Hoare (nd:47) & Kerrigan (2008) |

**Appendix 9.** References citing finds of **Mayor Island** obsidian, assigned using X-ray fluoresence, within Te Tai Tokerau, together with likely era. Indicative age is the date-range/period of the layer, provided by the author(s), in which the item was located; italics indicate undated sites from Figure 1 presumed to be pre-1500.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Apparent era (dark shading, mainly pre-1500; light shading, mainly post-1500; medium shading, transitional)** | | **Lithic assignment** | **Location** |
|  | **Indicative age (page)** | **Method (page)** | **Method (page)** |  |
| *1, Booth et al. (2018:13)* | *?* | *-* | *XRF (13)* | *Tom Bowling Bay* |
| 2, L. Furey pers. comm. | Early | *-* | XRF | Twilight Bay |
| 3, Seelenfreund & Bollong (1989:180) | Early (180) | Radiocarbon (173–174) | XRF (174) | Houhora |
| 4, Moore & Coster (2015:8) | Late 15th to 18th centuries(1) | Radiocarbon (4) | XRF (8) | Southern Ninety Mile Bch |
| 5, Phillipps et al. (2016:113,118) | ~late 14th century (107) | Radiocarbon (in Allen 2006:50) | XRF (108) | Tauroa Point |
| 6, Booth et al. (2018:13) | ? | - | XRF (13) | Berghan Pt to Tikitiki |
| 7, Booth et al. (2018:15) | ? | - | XRF (15) | W and E Bay of Islands |
| 8, McCoy et al. (2019) | 1400–1500 (McCoy & Ladefoged 2012:3) | Radiocarbon (McCoy & Ladefoged 2012:3) | XRF (McCoy & Ladefoged 2012:6) | Patunui |
| 9, McCoy et al. (2019) | ? | - | XRF | Mangahawea Bay &  Paeroa Pa |
| 10, McCoy et al. (2010:175) | Classic Period (175) | Taxa present (175) | XRF (175) | Urupukapuka; also McCoy et al. (2019) |
| 11, Seelenfreund & Bollong (1989:180) | Late (180) | Radiocarbon (173–174) | XRF (174) | Pouerua |
| 12, McCoy et al. (2010:178) | Classic Period (178) | Radiocarbon (presumably) (177) | XRF | Pouerua; based on Seelenfreund & Bollong (1989) assignment |
| 13, McCoy et al. (2014:472) | 1400–1600 (472) | Radiocarbon (469) | XRF (470) | Pouerua |
| 14, McCoy et al. (2014:472) | 1600–1769 (472) | Radiocarbon (469) | XRF (470) | Pouerua |
| *15, Booth et al. (2018:13)* | *?* | *-* | *XRF (13)* | *Mitimiti* |
| 16, Robinson (2016:317) | Probably late period (317) | Mainly near-absence Mayor I obsidian (317) | XRF (28) | Poor Knights Is |
| 17, Harris (2012:9) | Late 15th to mid-17th centuries (11) | Radiocarbon (11) | XRF (9) | Urquharts Bay |
| 18, Phillips & Druskovich (2009:28) | 1520–1650 (29) | Radiocarbon (29) | XRF (?) (28) | Urquharts Bay |
| 19, McCoy & Carpenter (2014:8) | 1500–1769 (1, 2) | Radiocarbon + taxa (2) | XRF (4) | Bream Head |
| 20, Turner et al. (2010:94) | 1500–1700 (ii) | Radiocarbon (ii) | XRF (89) | Puwera; also Hoare (nd) & Kerrigan (2008) |

**Appendix 10.** References citing finds of **Taupo Volcanic Zone** obsidian, assigned using X-ray fluoresence, within Te Tai Tokerau; none had associated dates.

|  |  |  |
| --- | --- | --- |
|  | **Lithic assignment** | **Location** |
|  | **Method (page)** |  |
| 1, McCoy et al. (2014:472) | XRF (470) | Pouerua |
| 2, McCoy et al. (2019) | XRF | Paeroa Pa |
| 3, McCoy et al. (2019) | XRF | Urupukapuka Pa |

**Appendix 11.** References citing finds of **Nelson/Marlborough argillite** within Te Tai Tokerau, together with likely era. Because Turner’s (2000) records of precise locations for individual items listed in her Table 6.2 could not be located, boundaries extropolated from descriptions on pages 336–7,347–8 are used. Some published records here undoubtedly involve double-counting that is essentially unresolvable (particularly between Turner [2000] and Prickett [1989], and Turner [2000] and Furey [2002]). BWC, Booth Whanau Collection, Waitangi Museum; RWC, Rewha Whanau Collection, Rawhiti. Indicative age is the date-range/period of the layer, provided by the author(s), in which the item was located; italics indicate undated sites from Figure 1 presumed to be pre-1500.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Apparent era (dark shading, mainly pre-1500; light shading, mainly post-1500; medium shading, transitional)** | | **Lithic assignment** | **Location** |
|  | **Indicative age (page)** | **Method (page)** |  |  |
| 1, Prickett (1989:146) | ? | - | N. Prickett | Numerous Far-North sites |
| *2, BWC, adzes or part-adzes 72T35,176,177,183* | *?* | *-* | *Botica* | *Tom Bowling Bay* |
| *3, BWC, part-adze 53S4* | *?* | *-* | *Botica* | *Spirits Bay* |
| 4, Turner (2000:428) | ? | - | Turner | Far North ‘North Cape’ |
| *5, Moore & Coster (2015:2,4)* | *?* | *-* | *‘argillite’* | *Te Arai, Ninety Mile Bch* |
| 6, Turner (2000:462); Furey (2002:97) | Early (Furey 2002:35) | Radiocarbon (Furey 2002:35) | K. Prickett, Turner | Houhora |
| 7a, Turner (2000:428) | ? | - | Turner | Far North ‘Te Aupouri’ |
| 7b, Turner (2000:428) | ? | - | Turner | Far North ‘East Coast + Mt Camel’ |
| 8, BWC, part-adze 55S5 | ? | - | Botica | Whangaroa Hbr |
| 9, BWC, adze parts 74W17, 31M5 | ? | - | Botica | Mahinepua/Matauri Bay |
| 10, BWC, part-adze 69T4 | ? | - | Botica | Takou Bay |
| 11, BWC, adze 45O2 | ? | - | Botica | Okura R |
| 12, BWC, adze 18K1 | ? | - | Botica | Kaikohe |
| 13, Brassey (1985:50) | ? | - | K. Prickett | Pouerua 505 |
| 14, Moore et al. (1979:60–1,77) | ? | - | Simmons | Purerua Pen |
| 15, Turner (2000:342) | Late (342) | Occupied in 1772 (342) | Turner (?) | Paeroa Pa |
| 16, RWC, adzes or part-adzes RW7,9,12,15,17,31,43,49,59,64 | ? | - | J. Booth | Eastern Bay of Islands |
| 17, BWC, part-adze 83W2 | ? | - | Botica | Whangaruru |
| 18, Turner (2000:428) | ? | - | Turner | Far North ‘Sth East Coast’ |
| 19, Robinson (2016:324) | Probably late (317) | Mainly near-absence Mayor I obsidian (317) | Robinson | Poor Knights Is |
| *20, BWC, adzes or part-adzes 24M4,5,7,17,21* | *?* | *-* | *Botica* | *Mitimiti* |
| 21, Turner (2000:347,462) | ? | - | Turner | Hokianga |
| 22, Turner (2000:428,462) | ? | - | Turner | Far North ‘Sth West Coast’ |
| 23, Nevin (1984:33) | ? | - | Duff | Whangarei Hbr |
| *24, Nevin (1984:33)* | *?* | *-* | *Nevin (?)* | *Smugglers Bay* |
| 25, Turner (2000:428) | ? | - | Turner | Mid North ‘East Coast’ |
| 26, Turner (2000:129) | ? | - | Turner | Pouto |
| 27, Turner (2000:428) | ? | - | Turner | Mid North ‘Kaipara Heads’ & ‘Inner Kaipara Harb.’ |

**Appendix 12.** References citing finds of **Tahanga basalt** within Te Tai Tokerau, together with likely era. Identifications by Moore (1975) and NAR (1997) are ‘possible’ or ‘probable’. Because Turner’s (2000) records of precise locations for individual items listed in her Table 6.2 could not be located, boundaries extropolated from descriptions on pages 336–337 and 347–348 are used. Some published records here undoubtedly involve double-counting that is essentially unresolvable (particularly between Turner [2000], Moore [1975], Best (1977) and Furey [2002]). BWC, Booth Whanau Collection, Waitangi Museum; RWC, Rewha Whanau Collection, Rawhiti. Indicative age is the date-range/period of the layer, provided by the author(s), in which the item was located; italics indicate undated sites from Figure 1 presumed to be pre-1500.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Apparent era (dark shading, mainly pre-1500; light shading, mainly post-1500** | | **Lithic assignment** | **Location** |
|  | **Indicative age (page)** | **Method (page)** |  |  |
| *1, BWC, adze parts 72T1, 72T97/98; Moore et al. (1979:57,77)* | *?* | *-* | *Botica, Simmons* | *Tom Bowling Bay* |
| *2, BWC, adze parts 72T178, 72T179* | *?* | *-* | *Botica* | *Waikuku Bch* |
| *3, Moore (1975:33)* | *?* | *-* | *Moore* | *Spirits Bay* |
| 4, Moore et al. (1979:57,77) | ? | - | Simmons | Scott Point |
| 5, Turner (2000:428) | ? | - | Turner | Far North ‘North Cape’ |
| 6, Moore et al. (1979:57,77) | ? | - | Coster | The Bluff |
| 7, Moore (1975:33); Best (1977:316-318); Turner & Botica (1994:13); Turner (2000:462); Furey (2002:97) | Early (Furey 2002:35) | Radiocarbon (Furey 2002:35) | Moore, Turner, Botica, K. Prickett, Best | Houhora |
| 8, Turner (2000:428) | ? | - | Turner | Far North ‘Te Aupouri’ |
| 9, Turner (2000:428) | ? | - | Turner | Far North ‘East Coast + Mt Camel’ |
| 10, Moore (1975:33) | ? | - | Moore | Doubtless Bay area |
| 11, Moore (1975:33) | ? | - | Moore | Kaitaia area |
| 12, Phillipps et al. (2016:114) | ~late 14th century (107) | Radiocarbon (in Allen 2006:50) | Phillipps et al. | Tauroa Point |
| 13, Campbell et al. (2018) | Early (84) | Radiocarbon (84) | Campbell | Tauranga Bay |
| 14, Moore (1975:33) | ? | - | Moore | Herekino to Whangape |
| *15, BWC, adze parts 24M16, 24M115* | ? | - | *Botica* | *Mitimiti* |
| 16, Moore (1975:33); | ? | - | Moore | Hokianga Mouth |
| 16, Turner (2000:347,462) | ? | - | Turner | Hokianga Mouth |
| 17, Turner (2000:428) | ? | - | Turner | Far North ‘Sth West Coast’ |
| 18, BWC, adze & part 61T7, 61T23 | ? | - | Botica | Te Tii |
| 19a, Peters (1975:177); Best (1977:318–319) | Early (Peters 1975:171) | Radiocarbon (Peters 1975:171) | Best (*see* NAR 1997:20) | Hahangarua |
| 19b, NAR (1997:38) | Early (38) | Radiocarbon (38) | Johnson | Opunga |
| *20, Best (1996:17); NAR (2011)* | ? | - | *Turner* | *Manawaora Bay* |
| 21, Moore (1975:33); Turner (2000:126); RWC adze part RW50 | ? | - | Moore, Turner | Bay of Islands |
| 22, Turner (2000:428) | ? | - | Turner | Far North ‘Sth East Coast’ |
| 23, Moore (1975:33) | ? | - | Moore | Hokianga to Kaipara |
| 24, Turner et al. (2010:80,87) | 1500-1700 (ii) | Radiocarbon (ii) | Turner | Puwera; also Hoare (nd) & Kerrigan (2008) |
| 25, Moore (1975:33) | ? | - | Moore | Whangarei Hbr. & coast |
| 26, Moore (1975:33) | ? | - | Moore | Bream Tail |
| 27, Turner (2000:428) | ? | - | Turner | Mid North ‘East Coast’ |
| 28, Moore (1975:33) | ? | - | Moore | North Kaipara Hbr |
| 29, Turner (2000:428) | ? | - | Turner | Mid North ‘Kaipara Heads’ & ‘Inner Kaipara Harb.’ |

**Appendix 13.** References citing finds of **Motutapu greywacke** within Te Tai Tokerau, together with likely era. Because Turner’s (2000) records of precise locations for individual items listed in Table 6.2 could not be located, boundaries extropolated from descriptions on pages 336–337 and 347–348 are used. Indicative age is the date-range/period of the layer, provided by the author(s), in which the item was located.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Apparent era (dark shading, mainly pre-1500; light shading, mainly post-1500; medium shading, transitional)** | | **Lithic assignment** | **Location** |
|  | **Indicative age (page)** | **Method (page)** |  |  |
| 1, Turner (2000:428) | ? | - | Turner | Far North ‘North Cape’ |
| 2, Turner (2000:462) | 14th century (Furey 2002:35) | Radiocarbon (Furey 2002:35) | Turner | Houhora |
| 3, Turner (2000:428) | ? | - | Turner | Far North ‘Te Aupouri’ |
| 4, Turner (2000:428) | ? | - | Turner | Far North ‘East Coast + Mt Camel’ |
| 5, Campbell et al. (2018:84) | 14th century (84) | Radiocarbon (84) | Campbell | Tauranga Bay |
| 6, Turner (2000:428) | ? | - | Turner | Far North ‘Sth East Coast’ |
| 7, Turner (2000:428) | ? | - | Turner | Far North ‘Sth West Coast’ |
| 8, Turner (2000:347,462) | ? | - | Turner | Hokianga Mouth |
| 9, Robinson (2016:324) | Probably late (317) | Mainly near-absence Mayor I obsidian (317) | Robinson | Poor Knights Islands |
| 10, Turner (2000:428) | ? | - | Turner | Mid North ‘East Coast’ |
| 11, Turner (2000:428) | ? | - | Turner | Mid North ‘Kaipara Heads’ & ‘Inner Kaipara Harb.’ |

**Literature for appendices**

Allen, M.S. 2006. Periodicity, duration, and function of occupation at Tauroa Point, Northland, New Zealand. *New Zealand Journal of Archaeology* 27: 19–62.

Anderson, A. 1983. Salvage excavations at Mapoutahi Pa, Otago. University of Otago, Anthropology Department Working Papers: No. 1. A report to Lands and Survey Department.

Anderson, A. 1989. Prodigious Birds: moas and moa-hunting in prehistoric New Zealand. Cambridge University Press.

Anderson, A. 1991. The chronology of colonization in New Zealand. *Antiquity* 65: 767–795.

Best, S. 1977. The Maori adze: an explanation for change. *The Journal of the Polynesian Society* 86: 307–337.

Best, S. 1996. The South Manawaora Block, Clendon Cove, Manawaora Bay. Archaeological survey of coastal areas.

Best, S. 2003. Archaeology at Wairoa Bay, Purerua Peninsula, Bay of Islands. Prehistory and history on Hansen’s Grant. Report prepared for Mountain Landing Ltd.

Booth, J.; Booth, W.; Booth, C.; Booth, R.; Marshall, B. 2017. Evidence for early – yet short-lived – use of toheroa (*Paphies ventricosa*) shell in the manufacture of trolling-lure shanks? *Archaeology in New Zealand* 60 (1): 31–44.

Booth, J.; Booth, W.; McAlister, A. & Rewha, A. 2018. Korero around sources of obsidian artefacts found in the Bay of Islands and other parts of Northland. *Archaeology in New Zealand* 61 (4): 10–22.

Brassey, R.J.N. 1985. An analysis of some lithic artefact assemblages from Pouerua, Northland. Unpubl. M.Phil thesis in Anthropology, University of Auckland.

Campbell, M. & Hudson, B. 2011. The NRD Community report. CRC Heritage Ltd.

Campbell, M.; Hudson, B.; Craig, J.; Cruickshank, A.; Furey, L.; Greig, K.; McAlister, A.; Marshall, B.; Nims, R.; Petchey, F.; Russell, T.; Trilford, D. & Wallace, R. 2019. The Long Bay Restaurant Site (R10/1374), Auckland, New Zealand, and the archaeology of the mid-15th Century in the upper North Island. *Journal of Pacific Archaeology* 10: 19–42.

Campbell, M.; Plowman, M.; Brooks, E.; Cruickshank, A.; Furey, L.; Horrocks, M.; Turner, M.; Wallace, R. & Walter, R. 2018. The Torpedo Bay excavations: Volume 1, the pre-European Maori site (HPA authority 2009/275). CFC Heritage.

Campbell, M. & Trilford, D. 2019. Archaeological investigations at Q07/751, 6 Ocean Beach Road, Urquharts Bay (HNZPTA authority 2017/599).

Carpenter, J. 2012. Bream Head heritage assessment. Department of Conservation.

Coster, J. 1980. Pouto State Forest (2F Lease and Southern Section) archaeological site survey 1978–80.

Coster, J. 1983. The Aupouri sand dunes archaeological study: an interim report. *New Zealand Archaeological Association Newsletter* 26: 174–191.

Coster, J. 1989. Dates from the dunes: a sequence for the Aupouri Peninsula, Northland, New Zealand. *New Zealand Journal of Archaeology* 11: 51–75.

Coster, J. 1997. Te Oneroa a Tohe – the archaeology of Ninety Mile Beach. Waitangi Tribunal. Muriwhenua Land Report, WAI45. GP Publications, Wellington.

Coster, J. & Johnston, G. 1976. Aupouri State Forest (proposed Mt. Camel Lease). Archaeological site survey, March 1976.

Cruickshank, A. 2011 (not seen). A qualitative and quantitative analysis of the obsidian sources on Aotea Great Barrier Island and their archaeological significance. Unpublished MA Thesis, University of Auckland.

Davidson, J. 1982. Northland *in* The first thousand years. Regional perspectives in New Zealand archaeology. Prickett, N. ed. Pp 11–27. The Dunmore Press Ltd, Palmerston North. √

Douglas, P. & Fredericksen, C. 1985. East Beach Archaeological Survey. Stage 1 February 1985. New Zealand Historic Places Trust Auckland 1985/3.

Fairfield, G. 1960. Artifacts from the Far North of New Zealand. *Tane* 8: 65–68.

Fox, A. 1982. Obsidian from excavations in Auckland and Hawke's Bay. *New Zealand Archaeological Association Newsletter* 25: 208–209.

Furey, L. 2002. Houhora. A fourteenth century Maori village in Northland. Bulletin of the Auckland Museum 19.

Furey, L. 2004. Material culture. In: Change through time: 50 years of New Zealand archaeology (eds L. Furey and S. Holdaway). Auckland: New Zealand Archaeological Association Monograph 26. Pp.29–54.

Goddard, M. 2012. Urupukapuka Island Scenic Reserve historic heritage assessment. Department of Conservation.

Harris, J. 2012. Archaeological investigation at QO7/751, 4 Ocean Beach Road, Urquharts Bay. Report to the New Zealand Historic Places Trust and Don Grimwood and Anni Veart-Smith.

Harsant, W.J. 1983. Radiocarbon dates from N44/97, Hahei, Coromandel Peninsula. *New Zealand Archaeological Association Newsletter* 26: 59–61.

Harsant, W.J. 1985. The Hahei (N44/97) assemblage of Archaic artefacts. *New Zealand Journal of Archaeology* 7: 5–37.

Hill, N. & Campbell M. 2009. Archaeological monitoring of the Oakura wastewater treatment and reticulation upgrade. CFG Heritage Ltd.

Hoare, S.G. Nd. Obsidian Sourcing Report. <https://dl.heritage.org.nz/greenstone3/library/collection/pdf-reports/document/Hoare1> √

Kerrigan, C-L. 2008. Anthro 317. Field Methods in Archaeology. <https://dl.heritage.org.nz/greenstone3/library/sites/heritage-nz/collect/pdf-reports/index/assoc/Kerrigan/1.dir/Kerrigan1.pdf>

Knox, B. 2011. (Not seen) Obsidian exchange in the South: PXRF analysis of two sites form the north of the South Island of New Zealand. BA Hons thesis, University of Otago.

Ladefoged, T.N.; Gemmell, C.; McCoy, M.; Jorgensen, A.; Glover, H.; Stevenson, C. et al. 2019. Social network analysis of obsidian artefacts and Māori interaction in northern Aotearoa New Zealand. *PLoS ONE* 14(3): e0212941. <https://doi>. org/10.1371/journal.pone.0212941

Leach, B.F. 1978. Four centuries of community interaction and trade in Cook Strait, New Zealand. *Mankind* 11: 391–405.

Leach, B.F.; Anderson, A.J. 1978. The prehistoric sources of Palliser Bay obsidian. *Journal of Archaeological Science* 5: 301–307.

Maingay, J. 1986. Initial report on Northland archaeology. NZ Historic Places Trust Auckland 1986/13.

McCoy, M.D. & Carpenter, J. 2014. Strategies for obtaining obsidian in pre-European contact era New Zealand. *PLOS ONE* 9(1): 1–13.

McCoy, M.D. & Ladefoged, T.N. 2012. Northland Archaeological Project: a summary report of 2012 archaeological field research in Patunui Bay. Heritage New Zealand, Kerikeri.

McCoy, M.D.; Ladefoged, T.N.; Blanshard, A. & Jorgensen, A. 2010. Reconstructing lithic supply zones and procurement areas: an example from the Bay of Islands, Northland, New Zealand. *Journal of Pacific Archaeology* 1: 174–183.

McCoy, M.D.; Ladefoged, T.N.; Codlin, M.; & Sutton, D.G. 2014. Does Carneiro's circumscription theory help us understand Maori history? An analysis of the obsidian assemblage from Pouerua Pa, New Zealand (Aotearoa). *Journal of Archaeological Science* 42: 467–475.

McCoy, M.D.& Robles, H.N. 2016. The geographic range of interaction spheres during the colonization of New Zealand (Aotearoa): new evidence for obsidian circulation in southern New Zealand. *The Journal of Island and Coastal Archaeology* 11: 285–293.

McCoy, M.D. et al. 2019. Geochemical sourcing of New Zealand obsidians by Portable X-Ray Fluorescence from 2011 to 2018. *Journal of Open Archaeology Data* 7: 1. DOI: <https://doi.org/10.5334/joad.52>

Millener. P.R. 1981. (not seen; quoted by Anderson 1989:110) The Quaternary avifauna of the North Island, New Zealand. Unpublished PhD thesis, University of Auckland.

Moore, P.R. 1975. Preliminary investigation of the Tahanga basalt, Coromandel Peninsula. *New Zealand Archaeological Association Newsletter* 18: 32–36.

Moore, P.R. 2012. Procurement and cultural distribution of obsidian in northern New Zealand. *Journal of Pacific Archaeology* 3: 17–32.

Moore, P.R. & Coster, J. 2015. Evidence of a well-developed obsidian distribution network in the far north of New Zealand: new data from the Aupouri Peninsula. *Journal of Pacific Archaeology 6*: 1–17.

Moore, P.R.; Keyes, I.W. & Orchiston, D.W. 1979. New records and an analysis of the side-hafted adze from New Zealand. *New Zealand Journal of Archaeology* I: 53–84.

Mosley. B. & McCoy, M.D. 2010. Sourcing obsidian and pitchstone from the Wakanui Site, Canterbury, New Zealand. *Rapa Nui Journal 24*: 6–15.

NAR (Northern Archaeological Research) 1997. Archaeological investigations of sites N12/8 (Q05/46) and N12/35 (Q05/73), Opunga Bay, Moturua Island, Bay of Islands.

NAR (Northern Archaeological Research) 2011. Archaeological survey and assessment of a proposed beach restoration, Clendon Cove, Bay of Islands.

Nevin, G. 1984. Whangarei Harbour Study. Archaeology. Technical Report No. 9 Archaeology. Whangarei Harbour Board.

Peters, K.M. 1975. Agricultural gardens on Moturua Island in the Bay of Islands. *New Zealand Archaeological Association Newsletter* 18: 171–180.

Petchey, F. 2000. Radiocarbon dating fish bone from the Houhora archaeological site, New Zealand. *Archaeology in Oceania* 35: 104–115.

Phear, S.; Shakles, R. & Clough, R. 2019. Residential subdivision Bishophill Farm, Matakana: archaeological monitoring and excavation report. Prepared in fulfilment of Heritage New Zealand Pouhere Taonga Authority No. 2014/641.

Phillipps, R.S.; McAlister, A.J. & Allen M.S. 2016. Occupation duration and mobility in New Zealand prehistory: Insights from geochemical and technological analyses of an early Māori stone artefact assemblage. *Journal of Anthropological Archaeology* 42: 105–121.

Phillips, C. & Druskovich, B. 2009. Archaeological investigation, midden Q07/571, 2567 Whangarei Heads Road, Urquharts Bay: Historic Places Authority 2007/25.

Phillips, C.A. & Foley, D. 1978. N.Z.H.P.T. Archaeological Site Survey. Site recording on the Karikari Peninsula.

Phillips, C. & Green, R.C. 1991. Further archaeological investigations at the settlement of Waiwhau, Hauraki Plains. *Records of the Auckland Institute and Museum* 28: 147–183.

Prickett, N. 1989. Adzes of Nelson argillite from the Far North of New Zealand - the Auckland Museum collection. *Archaeology in New Zealand* 32: 135–146.

Prince, D. 2010. Whangarei East Forest, Ngunguru Ford Road, Ngunguru, Northland. Post harvest archaeological assessment (NZHPT Authority 2009/48).

Reeves, R.D. & Ward G.K. 1976. Characterization studies of New Zealand obsidians: toward a regional prehistory. Advances in Obsidian Glass Studies: Archaeological and geochemical perspective 14: 259-287.

Robinson, J.J. 2016. Tawhiti Rahi: a multi-disciplinary study of Māori settlement of Tawhiti Rahi, an offshore island in northern New Zealand. Unpublished PhD thesis, University of Otago.

Robinson, J.; Blanshard, A.; Clendon, M.T.N.; Maxwell, J.; Sutton, N. & Walter, R. 2019. Mangahawea Bay revisited: a reconsideration of the stratigraphy and chronology of site Q05/682, Moturua Island, Bay of Islands, New Zealand. *Journal of Pacific Archaeology* 10: 45–55.

Roe, N. 1967. Archaeological investigations at Houhora. Thesis for Master of Arts in Anthropology, University of Auckland.

Seelenfreund, A. & Bollong, C. 1989. The sourcing of New Zealand archaeological obsidian artefacts using energy dispersive XRF spectroscopy. In: Saying so doesn’t make it so. Papers in honour of B. Foss Leach. Ed. D.G. Sutton. New Zealand Archaeological Association Monograph 17.

Sheppard, P.J.; Irwin, G.J.; Lin, S.C.; Cameron, P. & McCaffrey, C.P. 2011. Characterization of New Zealand obsidian using PXRF. *Journal of Archaeological Science* 38: 45–56.

Slocombe, A. 1993. An archaeological survey of the far north, encompassing the dunelands from Ninety Mile Beach to Parengarenga Harbour. Department of Conservation Northland Conservancy, Whangarei.

Spring-Rice, W. 1978. South Kaipara Head archaeological survey II. Waioneke to South Head. A survey undertaken for the New Zealand Historic Places Trust during January and May 1978.

Spring-Rice, W. 1996. Maori settlement on South Kaipara Peninsula. Unpubl. PhD thesis University of Auckland.

Taylor, M. 1984. Bone refuse from Twilight Beach. Thesis for Master of Arts in Anthropology, University of Auckland.

Taylor. M. nd. Kokohuia excavation draft.

Taylor, R.M.S. 1968. North Cape Notes. *New Zealand Archaeological Association Newsletter* 11: 39–49.

Thorne, G. 1875. Notes on the discovery of moa and moa-hunters' remains at Pataua River, near Whangarei. *Transactions and Proceedings of the Royal Society of New Zealand* 8: 83–94. √

Turner, M.T. 2000. The function, design and distribution of New Zealand adzes. Unpublished PhD thesis in Anthropology, University of Auckland.

Turner, M.; Bickler, S.; Clough, R.; Best, S. & Wallace, R. 2010. Puwera Landfill Site, Portland, Whangarei. Final Report on Excavations at sites Q07/1091, 1092 and 1103 in fulfilment of NZHPT Authority No. 2004/50 and 2009/250.

Turner, M. & Bonica, D. 1994. Following the Flake Trail: Adze Production on the Coromandel East Coast, New Zealand. *New Zealand Journal of Archaeology* 16: 5–32.

Walter, R. & Brooks, E. 2014. Final report on archaeological monitoring at the Blenheim Sewage Treatment Plant carried out under Authority 201I/349.

Walter, R. & Greig, K. 2017. Targeted archaeological excavations, Wharfside Log Yard, Eastland Port, Gisborne. Prepared for InSitu Heritage Ltd. <https://www.heritage.org.nz/protecting-heritage/archaeology/digital-library>

Ward, G.K. 1974. Source of obsidians from the Motutapu undefended site N38/37. *Records of the Auckland Institute and Museum* 11: 13–14.