

## Radiocarbon Dating Committee of Tohoku University No.13

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## Radiocarbon Dating Reports of Tohoku University No. 13

### Radiocarbon Dating Committee of Tohoku University\*

This date list follows Radiocarbon Dating Reports of Tohoku University No. 12 (1989). Instruments and dating techniques are essentially the same as those used for a previous report by Omoto (1979). Dates are calculated based on the half-life of 5,568 years for  $^{14}\text{C}$ , and the modern standard is based on the value of 74.59% of NBS oxalic acid. TH-917 and TH-919 dates are based on the half-life of 5,570 years, and the value of 95% of NBS oxalic acid. The errors are expressed as one standard deviation ( $\pm 1\sigma$ ).

Sample descriptions are based on the submitter's informations in following form.

Code No.	Name of sampling site	Radiocarbon age of sample (years B.P.)
1.	Locality (with latitude and longitude) of sampling site	
2.	Altitude (in meter a.s.l.) of sampling site and depth of sampling horizon	
3.	Materials of sample	
4.	Date of sampling (submitter)	
5.	Date of dating (operator)	
6.	Chemical assays of pretreating	
7.	Comment and reference	

The committee wishes to express his appreciations to submitters for their informations on their samples.

### Sample Descriptions

#### Geomorphic and geologic samples

##### *Matsushima Series*

1. Matsushima Town, Miyagi-gun, Miyagi Pref.
2. Shown in Fig. 1
7. K. Fujimoto (1990)

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\* c/o Inst. Geogr., Fac. Sci., Tohoku Univ., Aobyama, Aoba-ku, Sendai, 980 JAPAN. The editorial members of this list are F. Yonechi, T. Tamura and S. Hirano.

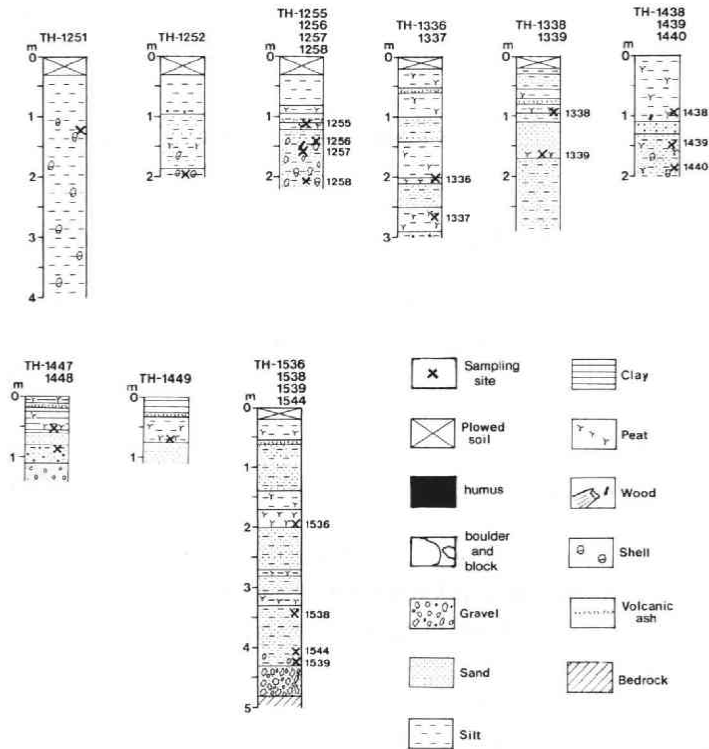


Fig.1 Columnar section (Matsushima series) (1) and legend.

**TH-1251 Matsushima (1)**

**2,180 ± 110**

1. Tedaru (38°23'20.3"N, 141°06'14.5"E)
2. G.L. -0.6 m a.s.l., 1.2 m below surface
3. Shell fragments
4. Apr. 16, 1986 (K. Fujimoto)
5. May 23, 1986 (K. Fujimoto)
6. Without chemical pretreatment

**TH-1252 Matsushima (2)**

**2,750 ± 140**

1. Tedaru (38°23'34.8"N, 141°06'14.5"E)
2. G.L. 0 m a.s.l., 1.9-2.0 m below surface
3. Shell fragments
4. Apr. 22, 1986 (K. Fujimoto)
5. May 25, 1986 (K. Fujimoto)

## 6. Without chemical pretreatment

- TH-1255 Matsushima (3)** **2,350 ± 120**
1. Tedaru (38°23'40.5"N, 141°06'14.5"E)
  2. G.L. 0.8 m a.s.l., 1.0-1.1 m below surface
  3. Organic silty clay
  4. Apr. 26, 1986 (K. Fujimoto)
  5. Aug. 1, 1986 (K. Fujimoto)
  6. Treated with 1N-HCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)
- TH-1256 Mastushima (4)** **2,420 ± 110**
1. Tedaru (38°23'40.5"N, 141°06'14.5"E)
  2. G.L. 0.8 m a.s.l., 1.4 m below surface
  3. Nut fragments (*Juglans* and *Aesculus*)
  4. Apr. 26, 1986 (K. Fujimoto)
  5. July 1, 1986 (K. Fujimoto)
  6. Treated with 1N-HCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)
- TH-1257 Matsushima (5)** **3,000 ± 120**
1. Tedaru (38°23'40.5"N, 141°06'14.5"E)
  2. G.L. 0.8 m a.s.l., 1.5 m below surface
  3. Wood
  4. Apr. 26, 1986 (K. Fujimoto)
  5. July 2, 1986 (K. Fujimoto)
  6. Treated with 1N-HCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)
- TH-1258 Matsushima (6)** **3,150 ± 120**
1. Tedaru (38°23'40.5"N, 141°06'14.5"E)
  2. G.L. 0.8 m a.s.l., 2.0 m below surface
  3. Shell
  4. Apr. 26, 1986 (K. Fujimoto)
  5. May 24, 1986 (K. Fujimoto)
  6. Pre-treated with 1N-HCl
- TH-1336 Matsushim (7)** **3,350 ± 130**
1. Nemari (38°23'55.1"N, 141°04'27.9"E)
  2. G.L. 3.8 m a.s.l., 2.0-2.1 m below surface
  3. Peat

4. Oct. 13, 1986 (K. Fujimoto)
5. Dec. 4, 1986 (K. Fujimoto)
6. Treated with 1N-HCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)

**TH-1337 Matsushima (8) 3,670 ± 130**

1. Nemari (38°23'55.1"N, 141°04'27.9"E)
2. G.L. 3.6 m a.s.l., 2.6-2.7 m below surface
3. Peaty silt
4. Oct. 13, 1986 (K. Fujimoto)
5. Nov. 22, 1986 (K. Fujimoto)
6. Treated with 1N-HCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)

**TH-1338 Matsushima (9) 2,200 ± 120**

1. Takagi (38°23'36.5"N, 141°04'17.6"E)
2. G.L. 2.1 m a.s.l., 1.1-1.2 m below surface
3. Peaty silt
4. Oct. 13, 1986 (K. Fujimoto)
5. Dec. 3, 1986 (K. Fujimoto)
6. Treated with 1N-HCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)

**TH-1339 Matsushima (10) 3,800 <sup>+160</sup>  
-150**

1. Takagi (38°23'36.5"N, 141°04'17.6"E)
2. G.L. 2.1 m a.s.l., 1.5-1.7 m below surface
3. Organic sandy silt
4. Oct. 13, 1986 (K. Fujimoto)
5. Dec. 5, 1986 (K. Fujimoto)
6. Treated with 1N-HCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)

**TH-1438 Matsushima (11) 3,290 ± 150**

1. Takagi (38°23'24.1"N, 141°03'45.5"E)
2. G.L. 0.3 m a.s.l., 1.0-1.1 m below surface
3. Organic silt
4. Jan. 13, 1988 (K. Fujimoto)
5. Feb. 13, 1988 (K. Fujimoto)
6. Treated with 1N-HCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)

**TH-1439 Matsushima (12) 6,640 ± 130**

1. Takagi (38°23'24.1"N, 141°03'45.4"E)

2. G.L. 0.3 m a.s.l., 1.4-1.5 m below surface
3. Organic sandy silt
4. Jan. 13, 1988 (K. Fujimoto)
5. Feb. 19, 1988 (K. Fujimoto)
6. Total carbon, treated with 1N-HCl (A. Miyazaki 1971)

**TH-1440 Matsushima (13)****6,550 ± 180**

1. Takagi, (38°23'24.1"N, 141°03'45.4"E)
2. G.L. 0.3 m a.s.l., 1.8-1.9 m below surface
3. Shell fragments (*Crassostrea gigas* etc.)
4. Jan. 13, 1988 (K. Fujimoto)
5. Feb. 8, 1988 (K. Fujimoto)
6. Pre-treated with 1N-HCl

**TH-1447 Matsushima (14)****2,320 ± 120**

1. Takagi (38°23'14.6"N, 141°04'12.4"E)
2. G.L. 1.3 m a.s.l., 0.55-0.60 m below surface
3. Organic clay
4. Mar. 5, 1988 (K. Fujimoto)
5. May 15, 1988 (K. Fujimoto)
6. Treated with 1N-HCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)

**TH-1448 Matsushima (15)****2,930 ± 140**

1. Takagi (38°23'14.6"N, 141°04'12.4"E)
2. G.L. 1.3 m a.s.l., 0.80-0.85 m below surface
3. Organic silty sand
4. Mar. 5, 1988 (K. Fujimoto)
5. May 16, 1988 (K. Fujimoto)
6. Total carbon, treated with 1N-HCl (A. Miyazaki 1971)

**TH-1449 Matsushima (16)****2,340 <sup>+120</sup>  
-110**

1. Takagi (38°23'19.0"N, 141°04'12.4"E)
2. G.L. 1.5 m a.s.l., 0.70-0.75 m below surface
3. Organic silt
4. Mar. 3, 1988 (K. Fujimoto)
5. May 14, 1988 (K. Fujimoto)
6. Treated with 1N-HCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)
7. The sampling site of this sample is situated at about 100 m inland from the

sites of TH-1447 and TH-1448. This sample was obtained from the right upper horizon of marine deposit.

**TH-1536 Matsushima (17) 3,450 ± 130**

1. Nemari (38°23'54.4"N, 141°04'37.2"E)
2. G.L. 4.2 m a.s.l., 1.85-2.00 m below surface
3. Peat
4. Dec. 22, 1988 (K. Fujimoto)
5. Feb. 24, 1989 (K. Fujimoto)
6. Treated with 1N-HCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)

**TH-1538 Matsushima (18) 4,750 ± 130**

1. Nemari (38°23'54.4"N, 141°04'37.2"E)
2. G.L. 4.2 m a.s.l., 3.45-3.50 m below surface
3. Organic silt
4. Dec. 22, 1988 (K. Fujimoto)
5. Feb. 18, 1989 (K. Fujimoto)
6. Treated with 1N-HCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)

**TH-1539 Matsushima (19) 4,920 <sup>+150</sup>  
-140**

1. Nemari (38°23'54.4"N, 141°04'37.2"E)
2. G.L. 4.2 m a.s.l., 4.2-4.3 m below surface
3. Organic silty sand
4. Dec. 22, 1988 (K. Fujimoto)
5. Feb. 15, 1989 (K. Fujimoto)
6. Treated with 1N-HCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)

**TH-1544 Matsushima (20) 4,990 ± 140**

1. Nemari (38°23'58.4"N, 141°04'37.2"E)
2. G.L. 4.2 m a.s.l., 4.0-4.2 m below surface
3. Wood and organic sandy silt
4. Dec. 22, 1988 (K. Fujimoto)
5. Mar. 22, 1989 (K. Fujimoto)
6. Treated with 1N-HCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)

***Funagata Series***

1. Sugenuma landslide area, Northern footslope of Funagata Volcano, Onoda Town, Kami-gun, Miyagi Pref.

2. Shown in Fig. 2
7. TH-917 and TH-1466 indicate each stage of landslide movement (R. Yagi 1990). TH-1466 means the age of establishment of this moor. TH-919 indicates the age of the lowerest river terrace of the Kanomata River.

**TH-917 Funagata (1)****older than 35,400**

1. Minamitakiba (38°32'30.0"N, 140°38'23.3"E)
2. G.L. 350 m a.s.l., 3 m below surface
3. Wood
4. Nov. 12, 1982 (R. Yagi and T. Miyagi)
5. Mar. 21, 1983 (M. Toyoshima)
6. Treated with KOH and 2%-HCl

**TH-919 Funagata (2)****6,960<sup>+170</sup>  
-160**

1. Minamitakiba (38°33'51.5"N, 140°38'56.6"E)
2. G.L. 220 m a.s.l., 2 m below surface
3. Wood
4. Dec. 11, 1982 (R. Yagi)
5. Mar. 23, 1983 (M. Toyoshima)
6. Treated with KOH and 2%-HCl

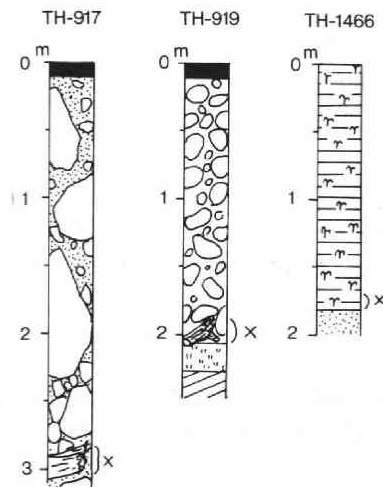


Fig. 2 Columnar section (Funagata series) (2).  
(See Fig. 1 for legend)



**TH-1466 Funagata (3)****1,600 ± 120**

1. Arasawa (38°32'42.6"N, 140°39'48.2"E)
2. G.L. 320 m a.s.l., 1.8 m below surface
3. Peat and wood fragments
4. May 7, 1988 (T. Miyagi)
5. June 30, 1988 (K. Fujimoto)
6. Treated with 1N-HCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)

***Philippine Series***

1. The samples were collected from two field survey area for recognition of mangrove habitat development located in the Luzon Island, Philippines.
2. Shown in Figs. 3 and 4
7. The data such as TH-1410 and TH-1418 in Pagbilao indicate origin of tidal flat type mangrove while TH-1347, TH-1348 *etc.* indicate driftage of the mangrove habitat (T. Miyagi *et al.* 1989).

**TH-1347 Infanta (1)****1,570 ± 100**

1. Binonoan, Infanta, Quezon (14°41'58.5"N, 121°38'20.5"E)
2. G.L. 0 m a.s.l., 1.8 m below surface
3. Peat
4. Aug. 11, 1986 (T. Miyagi)
5. Dec. 10, 1986 (S. Hirano)
6. Treated with 1N-NCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)

**TH-1348 Infanta (2)****700 ± 100**

1. Binonoan, Infanta, Quezon (14°41'06.6"N, 121°38'30.8"E)
2. G.L. 0 m a.s.l., 1.25-1.30 m below surface
3. Peat
4. Aug. 13, 1986 (T. Miyagi)
5. Dec. 18, 1986 (S. Hirano)
6. Treated with 1N-HCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)

**TH-1349 Infanta (3)****450 <sup>+100</sup>/<sub>-90</sub>**

1. Antikin, Infanta, Quezon (14°43'35.9"N, 121°41'11.7"E)
2. G.L. 0 m a.s.l., 0.65-0.70 m below surface
9. Wood
4. Aug. 14, 1986 (T. Miyagi)
5. Jan. 21 1987 (S. Hirano)

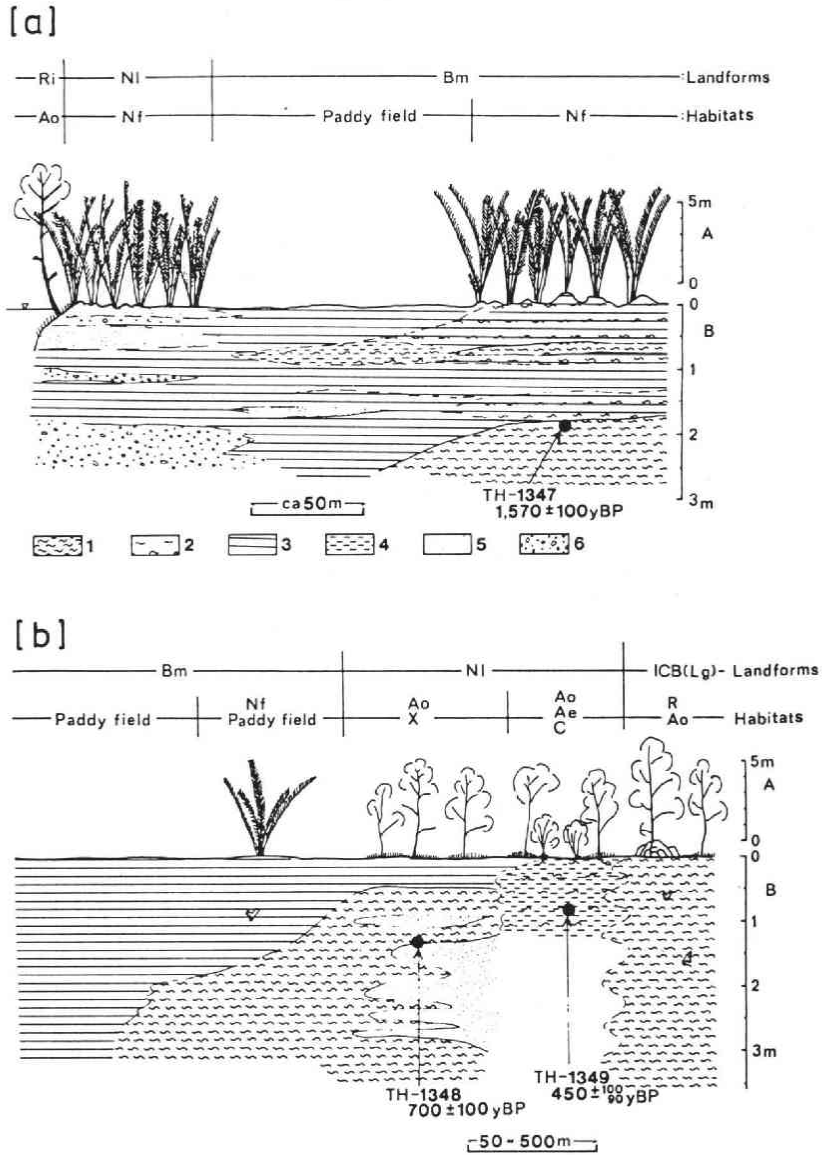


Fig. 3 Vegetation, landform and geologic profiles at Infanta.

[a] Binonoan area, [b] Antikin area

scale A: height of mangroves

scale B: level and depth of geomorphology

Ri: river, NI: natural levee, Bm: marginal area of backmarsh, ICB(Lg): inter channel basin (lagoon).

Ao: *Avicennia officinalis*, Nf: *Nypa fruticans*, X: *Xylocarpus* sp., Ae: *Aegicerous* sp., C: *Ceriops* sp., R: *Rhizophora* sp.

1: peat, 2: organic material, 3: clay and clayloam, 4: silt and siltloam, 5: sand and sandyloam, 6: sand and pebble.

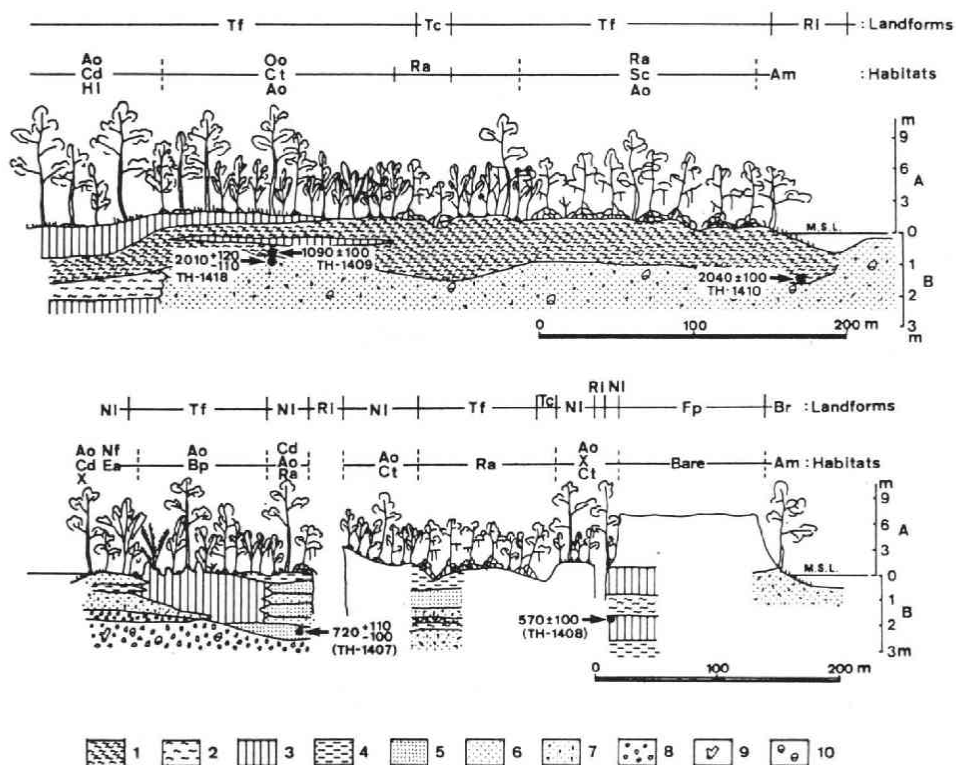


Fig. 4 Vegetation, landform and geologic profiles at Pagbilao.

scale A : height of mangroves

scale B : geomorphic and geologic profiles

Tf : tidal flat, NI : natural levee, Br : beach ridge, Ri : river, Tc : tidal creek, Fp : fish pond.

Am : *Avicennia marina*, Ao : *Avicennia officinalis*, Bp : *Bruguiera parviflora*, Cd : *Ceriops decandra*, Ct : *Ceriops tagal*, Ea : *Excoecaria agallocha*, Hl : *Heritiera littoralis*, Nf : *Nypa fruticans*, Oo : *Osbornia octadonta*, Ra : *Rhizophora apiculata*, Sc : *Sonneratia caseolaris*, X : *Xylocarpus* sp.

1 : mangrove peat, 2 : peaty clay, 3 : clay, 4 : silt, 5 : fine sand, 6 : medium sand, 7 : coarse sand, 8 : granule or pebble, 9 : wood fragment, 10 : shell fragment.

6. Treated with 1N-HCl, 2%-NaOH and 6N-HCl (K. Kigoshi *et al.* 1978)

#### TH-1407 Pagbilao (1)

720<sup>+110</sup>  
-100

1. Pagbilao, Quezon (13°38'29.2"N, 121°42'41.6"E)
2. G.L. 0 m a.s.l., 2.2-2.3 m below surface
3. Peat and Wood
4. Sep. 4, 1987 (T. Miyagi, S. Hirano, K. Fujimoto and K. Ajiki)

5. Nov. 29, 1987 (S. Hirano)
6. Total carbon, treated with 2N-HCl (A. Miyazaki 1971)

**TH-1408 Pagbilao (2) 570 ± 100**

1. Pagbilao, Quezon (18°38'24.3"N, 121°42'38.5"E)
2. G.L. 0 m a.s.l., 1.8-2.0 m. below surface
3. Peat
4. Sep. 4, 1987 (T. Miyagi, S. Hirano, K. Fujimoto and K. Ajiki)
5. Nov. 13, 1987 (S. Hirano)
6. Total carbon, treated with 2N-HCl (A. Miyazaki 1971)

**TH-1409 Pagbilao (3) 1,090 ± 100**

1. Pagbilao, Quezon (13°38'29.2"N, 121°42'47.2"E)
2. G.L. 0 m a.s.l., 1.4-1.5 m below surface
3. Peat
4. Sep. 5, 1987 (T. Miyagi, S. Hirano, K. Fujimoto and K. Ajiki)
5. Nov. 28, 1987 (S. Hirano)
6. Total carbon, treated with 2N-HCl (A. Miyazaki 1971)

**TH-1410 Pagbilao (4) 2,040 ± 100**

1. Pagbilao, Quezon (13°38'24.3"N, 121°42'47.0"E)
2. G.L. 0 m a.s.l., 1.5-1.7 m below surface
3. Peat
4. Sep. 5, 1987 (T. Miyagi, S. Hirano, K. Fujimoto and K. Ajiki)
5. Nov. 15, 1987 (S. Hirano)
6. Total carbon, treated with 2N-HCl (A. Miyazaki 1971)

**TH-1418 Pagbilao (5) 2,010 <sup>+120</sup><sub>-110</sub>**

1. Pagbilao, Quezon (13°38'29.2"N, 121°42'47.2"E)
2. G.L. 0 m a.s.l., 1.5-1.7 m below surface
3. Shell fragments
4. Sep. 5, 1987 (T. Miyagi, S. Hirano, K. Fujimoto and K. Ajiki)
5. Nov. 30, 1987 (S. Hirano)
6. Without chemical pretreatment

**References** (\*in Japanese, \*\*in Japanese with English abstract)

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