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MONOGRAPH OF THE GENUS *SPIROCERAMUS* (MOLLUSCA: PULMONATA: UROCOPTIDAE)

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The last complete monograph of the family Urocoptidae was that of H. A. Pilsbry, 1902-1904, in the second series of the *Manual of Conchology*. At that time only a single species was credited to the genus *Spiroceramus*. This species was *S. amplus* (Pfeiffer) from the region of Bayamo in the south of Oriente Province in eastern Cuba. Since then, C. G. Aguayo has described a species from the northern portion of Oriente Province, and I have described two species from the Bahamas, one from Little Abaco in the northern part, and one from Acklin's Island in the southern part of the Bahamian Archipelago. Two new species are described in this report from the Sierra de Cubitas, an isolated mountain system in north-central Camagüey Province in central Cuba.

With comparatively few exceptions the West Indian Urocoptidae are strictly calciphiles, living on limestone rocks where they feed on the encrusting lichens. A very few are arboreal. The Bahamian species were living on or under stones; the Cuban species on the limestone ledges. Under optimum conditions they can exist in incredible numbers, usually preferring shade, but they also exist on the limestone with no shade at all. They are active at night and during periods of rain.

UROCOPTIDAE

Genus *SPIROCERAMUS* Pilsbry and Vanatta

Spiroceramus Pilsbry and Vanatta, 1898, Proc. Acad. Nat. Sci. Philadelphia, **50**: 281 (type species, *Macroceramus amplus* Pfeiffer, original designation).

Shells thin, cylindrical, and composed of many narrow whorls. Spire acute, the apex entire, not deciduous. Colored a pale brownish with patches of white. Sculptured with fine oblique striae.

Whorls 9 to 15, convex, early whorls straight or slightly angular. Aperture somewhat oblique, subcircular, and the lip narrowly reflected. Suture indented, smooth or crenulate. Axis twisted or encircled with a thin spiral lamella.

Pilsbry (1904, p. 172), on the basis of the then known single species *S. amplus*, stated that it had the shape of *Holospira*, the axis of *Arangia*, and the aperture and protoconch of *Microceramus*. This statement can still stand with only the slight modification that all species do not have a spiral lamella on the axis and certain species possess a crenulated suture.

Subgenus SPIROCERAMUS Pilsbry and Vanatta

Species with or without the spiral lamella on the axis and having the oblique sculpture of fine striae similar on all whorls. The suture with or without crenulations.

SPIROCERAMUS (SPIROCERAMUS) AMPLUS (Pfeiffer)

Plate 1, figures 6, 7

Macroceramus amplus Gundlach, 1856, [in] F. Poey, *Memorias Sobre la Historia Natural de la Isla de Cuba*, Habana 2: 8, no. 378 (Cuba). [*Nomen nudum*.]

Macroceramus amplus 'Gundlach' Pfeiffer, 1858, *Malakozoologische Blätter* 5: 44 (Guisa [Bayamo, Oriente], Cuba); Pfeiffer, 1859, *Monographia Heliceorum Viventium* 4: 689; Pfeiffer, 1868, *Novitates Conchologicae* 3: 383, pl. 89, figs. 12-14; Arango, 1878, *Contribucion a la Fauna Malacologica Cubana*, Habana, p. 84 (Guisa and San Andres, Bayamo, Cuba). [Syntypes, MCZ 39318.]

Microceramus (Spiroceramus) amplus Pfeiffer. Pilsbry, 1904, *Man. of Conch.* (2) 16: 172, pl. 26, figs. 24, 29.

Measurements

Height	Width	
mm	mm	
10.5	3.9	Syntype. Guisa, Bayamo, Cuba
11.1	4.	Syntype. Guisa, Bayamo, Cuba
11.1	3.3	Syntype. Sao Arriba, Holguin, Cuba

Description: Shell reaching 11.1 mm in height, minutely umbilicate, cylindrical, attenuate, the upper third rapidly tapering to the early whorls and sculptured. Whorls 14 to 15, convex, those on the upper one-third slightly angled. Color a light grayish brown and mottled with a dull white. Spire extended, the lower two-thirds nearly parallel sided, the conic one-third forming an

angle of about 35° . Aperture subcircular, with the outer lip slightly reflected. Inner or parietal lip reflexed over the minute umbilicus. Axis twisted and forming a broad lamella. Columella short and slightly angled. Suture deeply impressed. Sculpture consisting of numerous and fine, oblique striae. Protoconch with $1\frac{1}{2}$ whorls and sculptured with fine, oblique striae.

Remarks: This is rather a remarkable species for any member of the Urocoptidae as it occurs in two distinct and well separated areas. Holguin is about 70 kilometers NE of Bayamo with much relatively flat country between them.

Specimens examined: CUBA. *Oriente Prov.:* Guisa, Bayamo; Cerro Moncada and Cerro San Juan, Sao Arriba, both Holguin.

SPIROCERAMUS (SPIROCERAMUS) BARBOURI Aguayo

Plate 1, figure 5

Spiroceramus amplus barbouri Aguayo, 1935, Mem. Soc. Cubana Hist. Nat., 9: 126, pl. 9, figs. 3-4 (Paradones junto a la Curva de la Campana, Gibara [Oriente], Cuba). [Holotype, MCZ 237877. Additional paratypes from the same locality, MCZ 110570.]

Measurements

Height	Width	
mm	mm	
5.5	2	Holotype
4.5	1.8	Paratype
4.75	2	Paratype
5.8	2	Paratype

Description: Shell reaching 5.8 mm in height, imperforate, cylindrical, attenuate, the upper third rapidly tapering to the early whorls and sculptured. Colored a light brown with most of the oblique costae and crenulations white. Whorls 9 to 11 and convex, the early 5 whorls straight-sided and vertical. Spire extended, the lower two-thirds nearly parallel sided, the conic one-third forming an angle of about 40° . Aperture subcircular, the outer lip simple and but slightly reflected. Axis twisted and forming a narrow lamella. Columella short and slightly angled. Suture impressed. Sculpture consisting of numerous and fine, oblique striae, many of which terminate above with crenulations at the suture. Protoconch with $1\frac{1}{2}$ whorls and sculptured with fine and straight striae.

Remarks: Originally described as a subspecies of *S. amplus*, this present entity is a distinct species. *S. barbouri* is only one-half

the height of *amplus* and has a crenulated suture which *amplus* does not have, and the axial lamella is much narrower. So far as now known, this species is limited to the type locality.

Specimens examined: Holotype and paratypes.

SPIROCERAMUS (SPIROCERAMUS) PILSBRYI new species

Plate 1, figure 3

Holotype: MCZ 188845, from Cerro de Tuabagüey, Sierra de Cubitas, Camagüey Province, Cuba.

Paratypes: MCZ 256082, from the type locality, and MCZ 188847 from Cueva del Circulo, Sierra de Cubitas, Camagüey Province, Cuba.

Measurements

Height	Width	
mm	mm	
15.1	4.8	Holotype
13	4.1	Paratype MCZ 188847

Description: Shell reaching 15 mm in height, minutely umbilicate, tapering from the ninth whorl to the protoconch and sculptured. Whorls 13 to 14 and slightly convex. Color a light horn with numerous, irregular patches of white. Spire extended and forming an angle of about 36° . Aperture subcircular, the outer lip slightly reflexed and the inner or parietal lip reflected over the minute umbilicus. Axis twisted and forming a broad lamella. Columella angled and somewhat broadened. Suture indented and coarsely crenulated. Sculpture consisting of exceedingly fine, oblique striae. Protoconch with two very finely lirated whorls.

Remarks: *S. pilsbryi* and *S. vanattai*, both from the Sierra de Cubitas are very different from one another. *S. pilsbryi* differs from *vanattai* by being much larger, having the broad axial lamella, coarse sutural crenulations and very much finer sculpture. The conic taper toward the protoconch starts from near the center (ninth whorl) in *pilsbryi*, while in *vanattai* the entire shell from the body whorl tapers toward the protoconch.

This must represent quite a rare species, as only a very few specimens are known.

Specimens examined: Holotype and paratype.

SPIROCERAMUS (SPIROCERAMUS) VANATTAI new species

Plate 1, figure 4

Holotype: MCZ 256083, from Los Cangilones, Sierra de Cubitas, Camagüey Province, Cuba.

Paratypes: From the same locality (MCZ 131387; MCZ 80765), and from El Cercado de Cubitas, near Cueva del Circuito (MCZ 131388; MCZ 188846); Finca Santa Gertrudis, Minas (MCZ 80766); Corrales de Cangilones (MCZ 131390); Paso de los Burros (MCZ 131386); Paso Paredones (MCZ 131391); El Tuabagüey, near the Cueva del Indio (MCZ 188844), all Sierra de Cubitas, Camagüey Province, Cuba.

Measurements ¹

Height	Width	
mm	mm	
9.4	4.6	Holotype
10	4.5	Paratype
8.6	4.5	Paratype
9	4.2	Paratype

Description: Shell reaching 10 mm in height, minutely umbilicate, conic, tapering from the body whorl to the protoconch and sculptured. Whorls 10 to 11 and moderately convex. Color light horn with irregular patches of white which cover mainly the oblique striae. Spire extended and forming an angle of 30°. Aperture subcircular, the outer lip slightly reflexed. Inner or parietal lip reflected over the minute umbilicus. Axis twisted but lacking a lamella. Columella short and slightly angled. Suture moderately indented and finely crenulate. Sculpture consisting of numerous and prominent oblique striae. Protoconch with 2 whorls and smooth.

Remarks: See Remarks under *S. pilsbryi*. Named for E. G. Vanatta who had been associated with H. A. Pilsbry at the Academy of Natural Sciences, Philadelphia.

Specimens examined: Holotype and paratypes.

Subgenus INSULACERAMUS new subgenus

Species with the axis twisted but not encircled with a spiral lamella. Early non-protoconch whorls rather coarsely lirate, later

¹ All specimens measured are from the type locality.

whorls finely lirate. Suture noncrenulate.

So far this subgenus is limited to the Bahama Islands. Specimens are exceedingly rare, as only three are known to represent the two species.

Type species: Microceramus (Spiroceramus) greenwayi Clench.

SPIROCERAMUS (INSULACERAMUS) ROBERTSONI (Clench)

Plate 1, figure 2

Microceramus (Spiroceramus) robertsoni Clench, 1963, Bull. Mus. Comp. Zool. **128**: 406, pl. 3, fig. 1 (Delectable Bay Settlement, Acklins Island, Bahama Islands). [Holotype, MCZ 225313.]

Measurements

Height	Width	
mm	mm	
6.7	1.0	Holotype

Description: Shell reaching 6.7 mm in height, thin, imperforate, dull and sculptured. Color probably gray, whorls 11 and convex. First 5 to 6 whorls forming the conic portion of the spire. Aperture subcircular. Lip simple. Columella nearly straight. Axis simple and not twisted. Suture indented. Sculpture consisting of numerous, fine, oblique axial riblets. These riblets are somewhat stronger on the first 5 to 6 whorls.

Remarks: This species is closely related to *S. greenwayi* Clench from Fox Town, Little Abaco Island, Bahamas. It differs by being a little more coarsely sculptured and having the protoconch a little smaller.

SPIROCERAMUS (INSULACERAMUS) GREENWAYI (Clench)

Plate 1, figure 1

Microceramus (Spiroceramus) greenwayi Clench, 1938, Mem. Soc. Cubana Hist. Nat., **12**: 329, pl. 25, fig. 1 (Fox Town, Little Abaco Island, Bahama Islands). [Holotype, MCZ 116688.]

Measurements

Height	Width	
mm	mm	
6.5	1.9	Holotype

Description: Shell thin, small and imperforate. Color a dull isabelline (true color, however, cannot be given as the single

specimen was found dead). Whorls 11, early 6 whorls which form the cone strongly convex; later whorls much less so. Aperture subcircular, lip simple and slightly flaring. Columella concavely arched, not distinct but forming the inner margin of the aperture. Axis simple with only a very slight twist. Sculpture: nuclear whorl faintly costate; next five strongly costate with oblique somewhat sinuous riblets, generally whitish; remaining whorls finely costate. Suture deeply indented but not crenulate. Aperture cast at an angle of 40° from a base line.

Remarks: See under *S. robertsoni* (Clench).

Specimens examined: Holotype.

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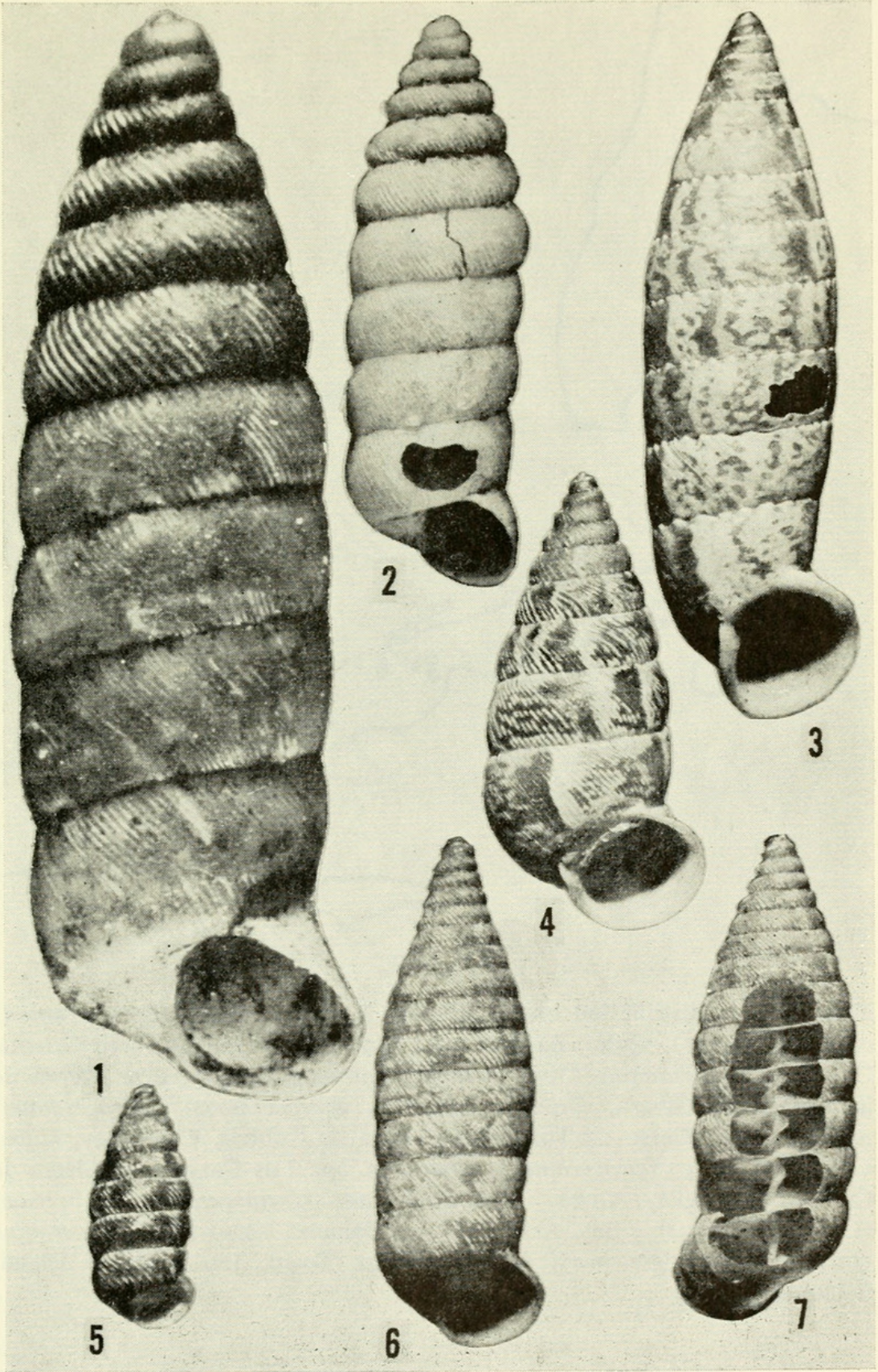
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(Received 2 August, 1966.)

Plate 1

- Fig. 1. *Spiroceramus* (*Insulaceramus*) *greenwayi* (Clench), Fox Town, Little Abaco Island, Bahama Islands (18.4 X). Holotype, MCZ 116688.
- Fig. 2. *Spiroceramus* (*Insulaceramus*) *robertsoni* (Clench), Delectable Bay, Acklins Island, Bahama Islands (10 X). Holotype, MCZ 225313.
- Fig. 3. *Spiroceramus* (*Spiroceramus*) *pilsbryi* n. sp., Cerro de Tuabagüey, Sierra de Cubitas, Camagüey, Cuba (5.3 X). Holotype, MCZ 188845.
- Fig. 4. *Spiroceramus* (*Spiroceramus*) *vanattai* n. sp., Los Cangilones, Sierra de Cubitas, Camagüey, Cuba (5.3 X). Holotype, MCZ 256083.
- Fig. 5. *Spiroceramus* (*Spiroceramus*) *barbouri* Aguayo, Curva de la Compañana, Gibara, Oriente, Cuba (5.3 X). Holotype, MCZ 237877.
- Figs. 6-7. *Spiroceramus* (*Spiroceramus*) *amplus* (Pfeiffer), Guisa, Bayamo, Oriente, Cuba (5.3 X). Syntypes, MCZ 39318. Figure 7 shows the axis and the spiral lamella.



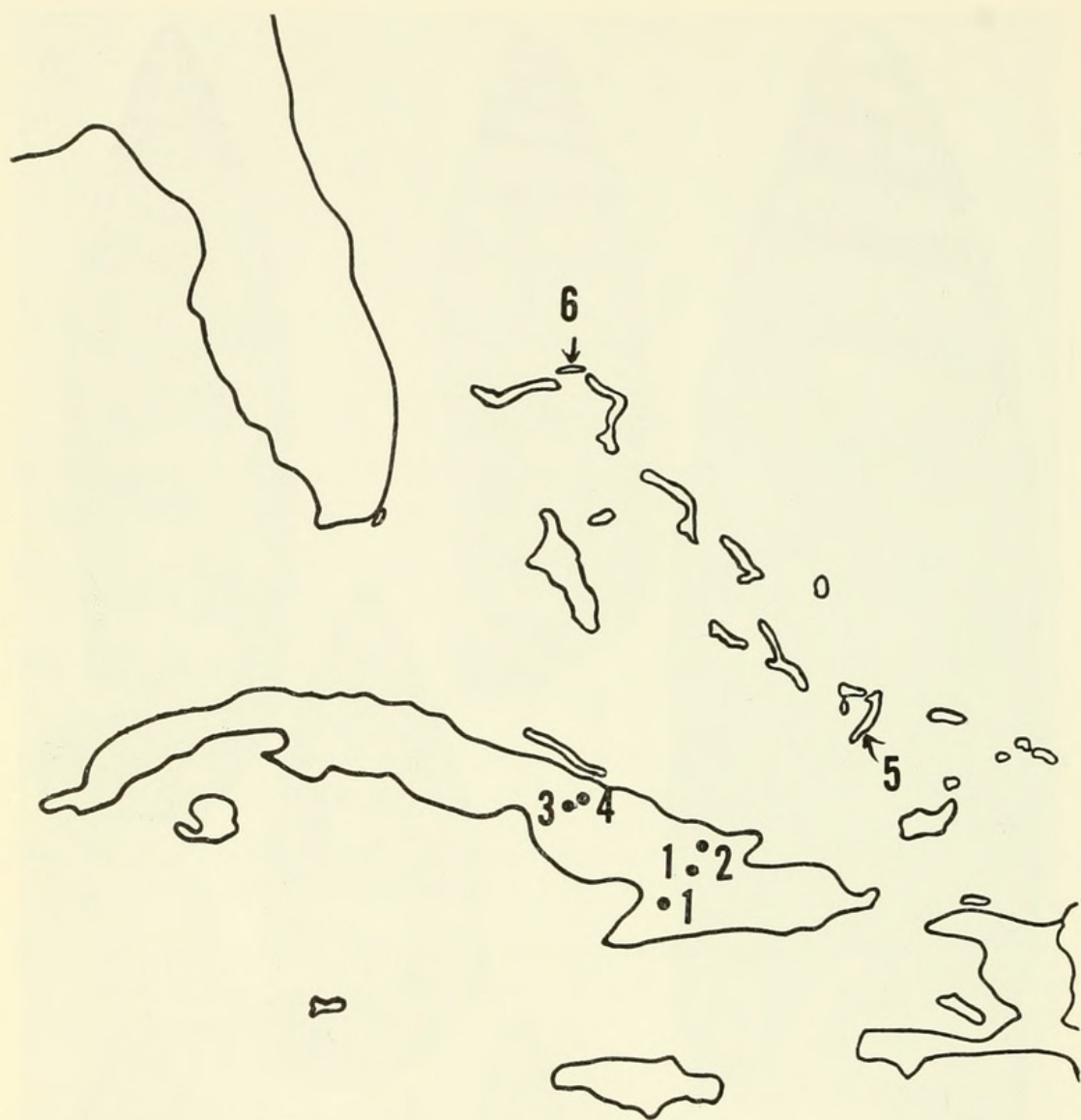


Plate 2

Map showing distribution of the species. 1. *Spiroceramus* (*Spiroceramus*) *amplus* (Pfeiffer), Guisa, Bayamo, and Sao Arriba, Holguin, both Oriente, Cuba. 2. *Spiroceramus* (*Spiroceramus*) *barbouri* Aguayo, near Curva de la Campana, Gibara, Oriente, Cuba. 3. *Spiroceramus* (*Spiroceramus*) *pilsbryi* n. sp., Cerro de Tuabagüey, Sierra de Cubitas, Camagüey, Cuba. 4. *Spiroceramus* (*Spiroceramus*) *vanattai* n. sp., Los Cangilones, Sierra de Cubitas, Camagüey, Cuba. 5. *Spiroceramus* (*Insulaceramus*) *robertsoni* (Clench), Delectable Bay, Acklins Island, Bahama Islands. 6. *Spiroceramus* (*Insulaceramus*) *greenwayi* (Clench), Fox Town, Little Abaco Island, Bahama Islands.



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