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# Aizoaceae of Thailand

**Leena Phuphathanaphong***

The family Aizoaceae was studied for "Flora of Thailand" under the advice of Prof. Kai Larsen during his sabbatical leave to Thailand in 1974.

This small family consisting of 5 genera is widely distributed in the tropics. Nine species are found in Thailand including one new record, *Glinus herniarioides* (Gagnep.) Tard.

## KEY TO THE GENERA

1. Carpels free. Leaves and tepals closely streaked with numerous short, linear, whitish, raphides **1. Gisekia**

1. Carpels united. Plants without raphides

2. Flowers ± 1 cm in diameter, solitary **2. Sesuvium**

2. Flowers ± 5 mm or < 5 mm, 2 or more together

3. Tepal segments free to the base

4. Inflorescences cymose **3. Mollugo**

4. Inflorescences in fascicles **4. Glinus**

3. Tepal segments united below into a tube ; seeds estrophiolate ; style 1 **5. Trianthema**

## 1. GISEKIA

Linn., Mant. **2** : 554. 1771; Gagnep. in Fl. Gén. I.-C. **2** : 1131. 1921; Tardieu-Blot in Fl. C.L.V. **5** : 90. 1967.

**Gisekia pharnaceoides** Linn., Mant. **2** : 562. 1771; Clarke in Hook.f., Fl. Br. Ind. **2** : 664. 1879; Gagnep. in Fl. Gén. I.-C. **2** : 1131, f. 134, 7–13. 1921; Tardieu-Blot in Fl. C.L.V. **5** : 90. 1967.

Thailand. — SOUTH-EASTERN: Chon Buri (Bang Saen); SOUTH-WESTERN: Prachuap Khiri Khan (Hua Hin); PENINSULAR: Songkhla.

Distribution.— From Tropical Africa to Afganistan, India, Ceylon and Hainan. (Type : from eastern India, cultivated at Uppsala in Linn., lecto.).

Ecology.— On sandy soil by sea.

## 2. SESUVIUM

Linn., Syst. Nat., ed. 10 : 1058. 1759; Pax & Hoffmann in Pflanzenfam. Band **16c** : 228. 1960.

* Forest Herbarium, Royal Forest Department, Bangkok 9, Thailand.

**Sesuvium portulacastrum** (Linn.) Linn., Syst. Nat., ed. 10 : 1058. 1759; Clarke in Hook.f., Fl. Br. Ind. **2** : 659. 1879; Jeffrey in Fl. E. Trop. Afr. : 2. 1961; Backer & Bakh. f., Fl. Java. **1** : 215. 1963; Tardieu - Blot in Fl. C.L.V. **5** : 82. 1967.— *Portulaca portulacastrum* Linn., Sp. Pl. : 446. 1753.

Thailand.— CENTRAL : Samut Prakan (Bang Pu, Ban Khlong Ta Wai); SOUTH-EASTERN : Prachin Buri; SOUTH-WESTERN : Ratchaburi, Prachuap Khiri Khan; PENINSULAR : Songkhla.

Distribution.— Pantropic. (Type : Curagao, Hermann in BM).

Ecology.— On open saline clayey soil; altitude up to 1 m.

Vernacular.— Phak bia tha-le ผักเบี้ยทะเล (South-western); Phak phaeng phuai tha-le ผักแพงพวยทะเล (Peninsular).

## 3. MOLLUGO

Linn., Sp. Pl. 1 : 89. 1753; Pax & Hoffmann in Pflanzenfam. **16c** : 226. 1960.

### KEY TO THE SPECIES

1. Leaves basal, radical, elliptic or oblong-spathulate ; seeds strophiolate **1. M. nudicaulis**

1. Leaves cauline, verticillate or sub-opposite, lanceolate or linear-lanceolate ; seeds estrophiolate **2. M. pentaphylla**

**1. Mollugo nudicaulis** Lamk., Encycl. Méth. Bot. **4** : 234. 1797; Hook. f., Fl. Br. Ind. **2** : 664. 1879.

Thailand.— SOUTH-EASTERN : Chon Buri (Ko Khram, Bang Sare); SOUTH-WESTERN : Kanchanaburi (Tha Sao).

Distribution.— Tropical and sub-tropical region. (Type : Mauritius, Commerson in ? P, holo.).

Ecology.— On dry sandy soil, at low altitudes.

**2. Mollugo pentaphylla** Linn., Sp. Pl. 1 : 89. 1753; Clarke in Hook.f., Fl. Br. Ind. **2** : 664. 1879; Gagnep. in Fl. Gén. I.-C. **2** : 1130. 1921; Backer in Fl. Mal. I. **4** : 268. 1951; Backer & Bakh. f., Fl. Java. **1** : 214. 1963; Tardieu-Blot in Fl. C.L.V. **5** : 93. 1967; Henty & Pritchard, Bot. Bull. **7** : 52. 1973.— Fig. 1.

Thailand.— NORTHERN : Chiang Mai, Mae Hong Son (Mae Sariang), Chiang Rai, Lampang (Ngao), Phitsanulok (Thung Salaeng Luang); NORTH-EASTERN : Phetchabun (Nam Nao), Loei (Phu Kradung), Nakhon Phanom; EASTERN : Nakhon Ratchasima (Pak Thong Chai); CENTRAL : Chai Nat; Nakhon Nayok; SOUTH-EASTERN : Chon Buri (Si Racha), Chanthaburi (Khao Phra Bat); SOUTH-WESTERN : Kanchanaburi (Tham Phra, Hin Dat, Khwae Noi, Sangkhlaburi); PENINSULAR : Surat Thani (Bang Bao), Pattani (Bannang Sta).

Distribution.— Old world tropics and sub-tropics, apparently very rare in Australia (Type : Ceylon).

Ecology.— Common on sandy soil, fields, gardens, and open places; altitude up to 600 m.

**Fig. 1.** *Mollugo pentaphylla* Linn.

## 4. GLINUS

Linn., Sp. Pl. 1 : 463. 1753; Pax & Hoffmann in Pflanzenfam. **16c** : 221. 1960; Backer in Fl. Mal. I. **4** : 269. 1951.

### KEY TO THE SPECIES

1. Hairs simple ; pedicel 5—14 mm ; leaves narrowly elliptic, narrowly oblong or oblanceolate or obovate-oblong **1. G. oppositifolius**

1. Hairs stellate ; pedicels 1—4 mm
   2. Capsules 5-locular ; leaves densely hairy, broadly obovate or sub-orbicular **2. G. lotoides**
   2. Capsules 3-locular ; leaves nearly glabrous, obovate or oblanceolate, rarely elliptic **3. G. herniarioides**

1. **Glinus oppositifolius** ( Linn.) A. DC., Bull. Herb. Boiss. II. **1** : 559. 1901; Backer in Fl. Mal. I. **4** : 270. 1951; Tardieu-Blot in Fl. C.L.V. **5** : 98. 1967.— *Mollugo oppositifolius* Linn., Sp. Pl. **1** : 89. 1753.— *G. mollugo* Fenzl., Ann. Mus. Wien **1** : 359. 1836; Ridl., Fl. Mal. Pen. **1** : 867. 1922.— Fig. 2.

Thailand.— NORTHERN : Chiang Mai ( sold in market ), Mae Hong Son, Lampang, Tak, Nakhon Sawan, Kamphaeng Phet; NORTH-EASTERN : Loei, Khon Kaen; EASTERN : Nakhon Ratchasima; CENTRAL : Chai Nat, Ang Thong, Nakhon Nayok, Krung Thep (Bangkok;) SOUTH-EASTERN : Chon Buri, Chachoengsao; SOUTH-WESTERN : Kanchanaburi, Ratchaburi.

Distribution.— Tropical Africa and Asia throughout Malaysia to N. Australia. ( Type : Ceylon, Hermann in BM holo.).

Ecology.— Common on sandy open waste areas, on sand banks, roadsides and rice-fields.

Vernacular.— Sadao din สะเดาดิน, Phak khuang ผักขวง ( Central ) ; Phak khi khuang ผักขี้ขวง, Phak khi khuang lao ผักขี้ขวงเลา, Phak khi gong ผักขี้ก่อง, I rai อีไร ( Northern ).

2. **Glinus lotoides** Linn., Sp. Pl. **1** : 463. 1753; Craib, Fl. Siam. En. **1** : 785. 1931; Backer in Fl. Mal. I. **4** : 269. 1951; Tardieu-Blot in Fl. C.L.V. **5** : 96. 1967. — *Mollugo hirta* Thunb., Prod. Fl. Cap. **1** : 24. 1794; Gagnep. in Fl. Gén. I.-C. **2** : 1127. 1921. — *Mollugo lotoides* W. & A. ex Clarke in Hook.f., Fl. Br. Ind. **2** : 776. 1879.

Thailand.— NORTHERN : Chiang Mai, Chiang Rai; EASTERN : Nakhon Ratchasima; CENTRAL : Ang Thong, Krung Thep (Bangkok); SOUTH-WESTERN: Kanchanaburi, Ratchaburi.

Distribution.— Cosmopolitan in the warmer parts of the world. ( Type : Sicily, Boccone in OXF, lecto.).

Ecology.— Common on open sandy thickets along the banks of the Chao Phaya River; on sandy grounds and in the fields.

**Fig. 2.** *Glinus oppositifolius* (Linn.) A. DC.

3. **Glinus herniarioides** ( Gagnep.) Tard. in Fl. C.L.V. **5** : 97. 1967. —*Mollugo hernarioides* Gagnep. in Fl. Gén. I.-C. 2 : 1127. 1921.

Thailand.— NORTH-EASTERN : Loei ( Si Than ).
Distribution.— Vietnam, Laos. ( Type : Hanoi, Balansa 4613).
Ecology.— Scattered near streams.
Vernacular.— Phak i rai ผักอีไร, Phak nang rai ผักนางไร ( Central ); Phak si siat ผักสีเสียด ( Chiang Mai ).

## 5. TRIANTHEMA

Linn., Sp. Pl. : 223. 1753; Gen. Pl., **5** : 105. 1754; Pax & Hoffmann in Pflanzenfam. **16c** : 230. 1960; Backer in Fl. Mal. I. **4** : 273. 1951.

### KEY TO THE SPECIES

1. Leaves linear ; flowers in clusters ; tepals triangular ; stamens 5 **1. T. triquetra**
1. Leaves orbicular to obovate ; flowers solitary ; tepals obtuse ; stamens 10–25 **2. T. portulacastrum**

1. **Trianthema triquetra** Rottl. & Willd., Ges. Naturf. Fr. Berin, Schr. **4** : 181. 1803; Clarke in Hook.f., Fl. Br. Ind. **2** : 660. 1879; Backer in Fl. Mal. I. **4** : 273. 1951.—Fig. 3.

Thailand.— SOUTH-WESTERN : Phetchaburi, Prachuap Khiri Khan.
Distribution.— India, Malaysia, Australia. (Type: India, Rottler in B-W, holo., in K, iso.).
Ecology.— On sandy soil.
Vernacular.— Phrom mi daeng พรมมิแดง, Phak bia ผักเบี้ย ( South-western ).

2. **Trianthema portulacastrum** Linn., Sp. Pl. **1** : 223. 1753; Craib, Fl. Siam. En. **1** : 784. 1931; Backer in Fl. Mal. I. **4** : 274. 1951; Larsen, Dansk Bot. Ark. **23** (1 ): 63. 1963; Tardieu-Blot, Fl. C.L.V. **5** : 85. 1967. — *T. monogyna* Linn., Mant. **1** : 69. 1767. — Fig. 4.

Thailand.— NORTHERN : Tak; CENTRAL : Chai Nat, Sing Buri, Krung Thep (Bangkok), Samut Prakan.
Distribution.— Pantropical. ( Type : South America, Herb. Sloane in BM ).
Ecology.— Common on waste grounds, alt. 0-400 m.
Vernacular.— Phak bia hin ผักเบี้ยหิน, Phak khom hin ผักโขมหิน ( Central ).

**Fig. 3.** *Trianthema triquetra* Rottl. & Willd.

**Fig. 4.** *Trianthema portulacastrum* Linn.

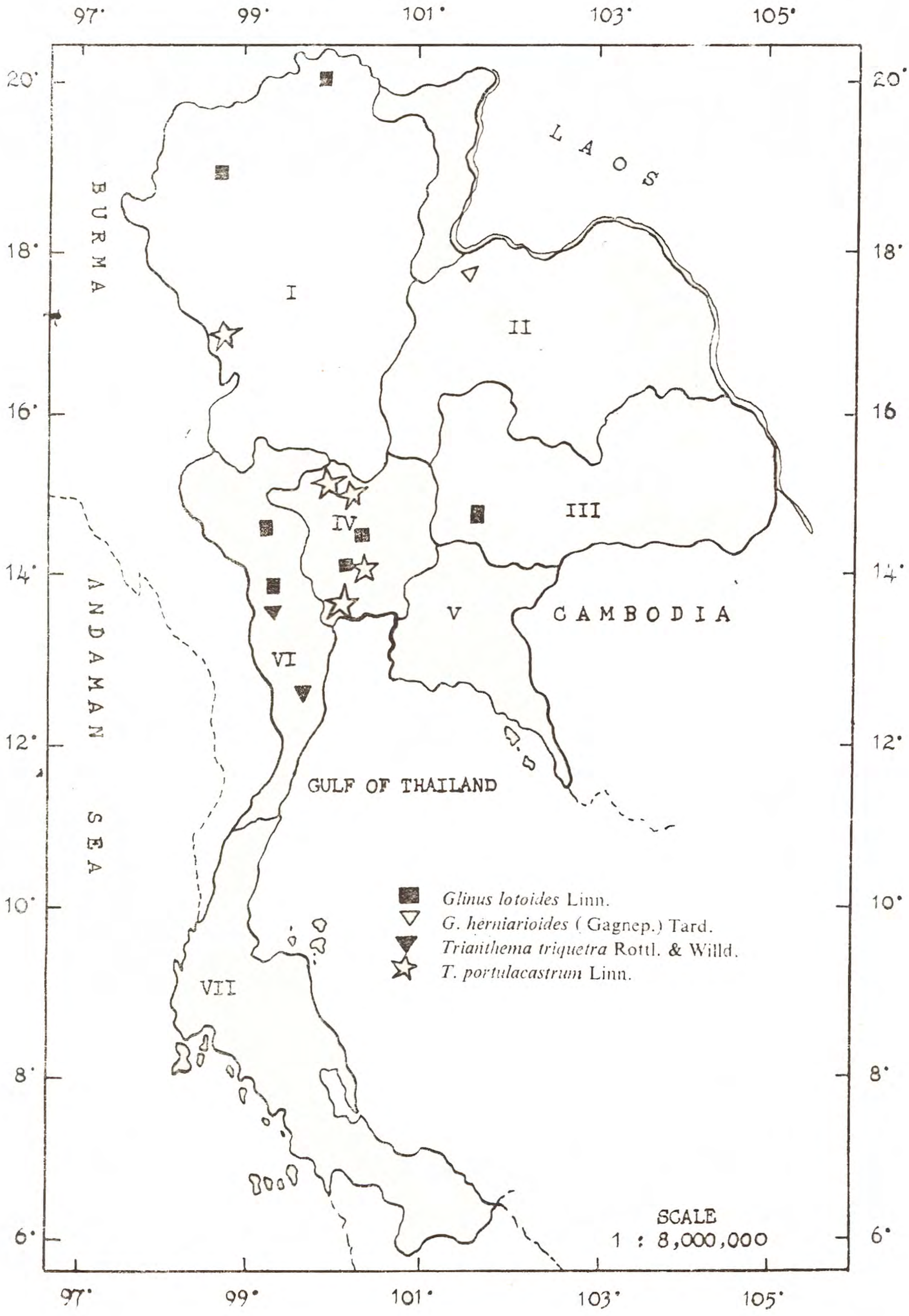


**Fig 5.** Distribution of Aizoaceae in Thailand.

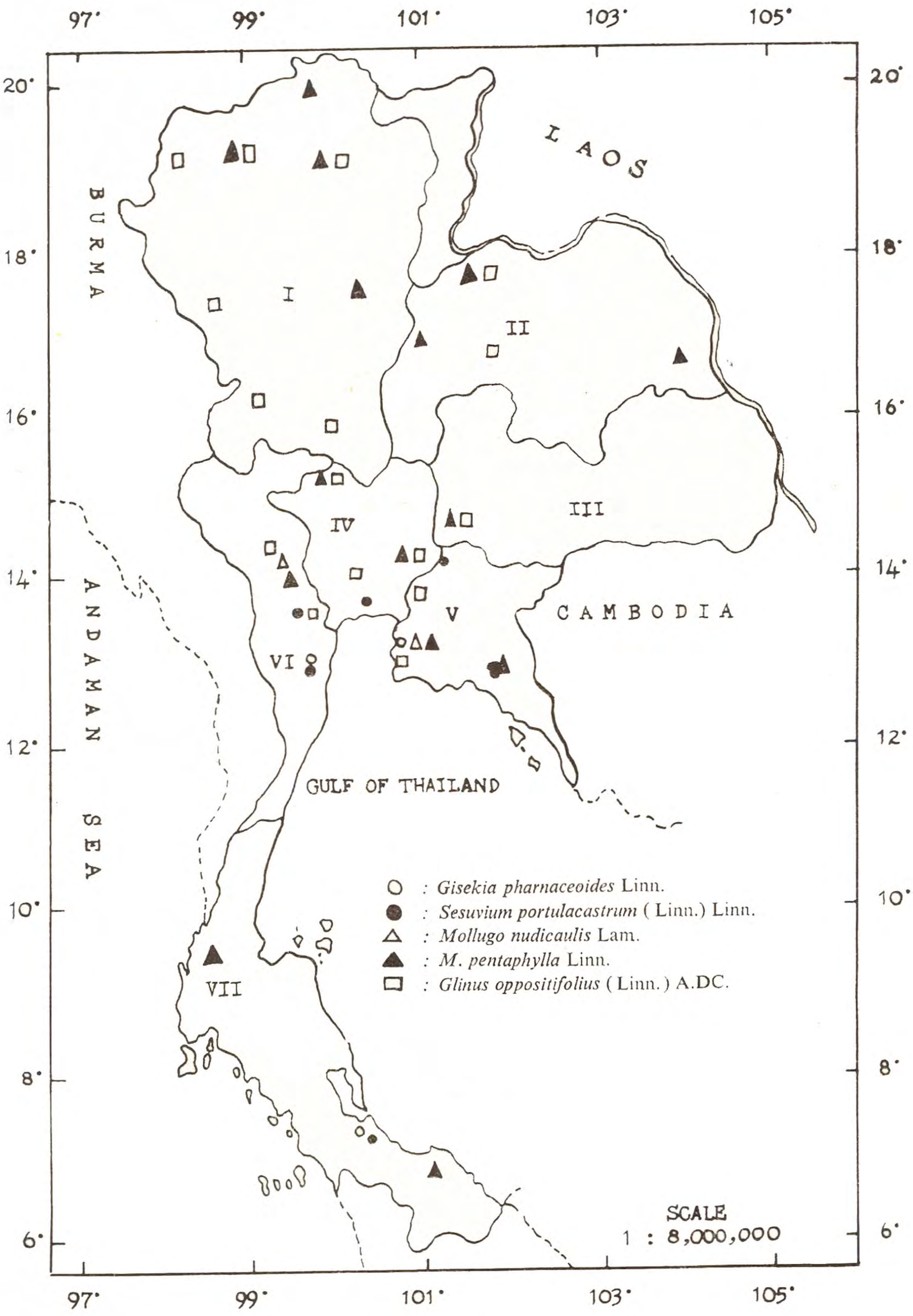


**Fig 6.** Distribution of Aizoaceae in Thailand.

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## Number of species

1. *Gisekia pharnaceoides* Linn.
2. *Sesuvium portulacastrum* ( Linn.) Linn.
3. *Mollugo nudicaulis* Lamk.
4. *M. pentaphylla* Linn.
5. *Glinus oppositifolius* A.DC.
6. *G. lotoides* Linn.
7. *G. herniarioides* ( Gagnep.) Tard.
8. *Trianthema triquetra* Rottl. & Willd.
9. *T. portulacastrum* Linn.

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