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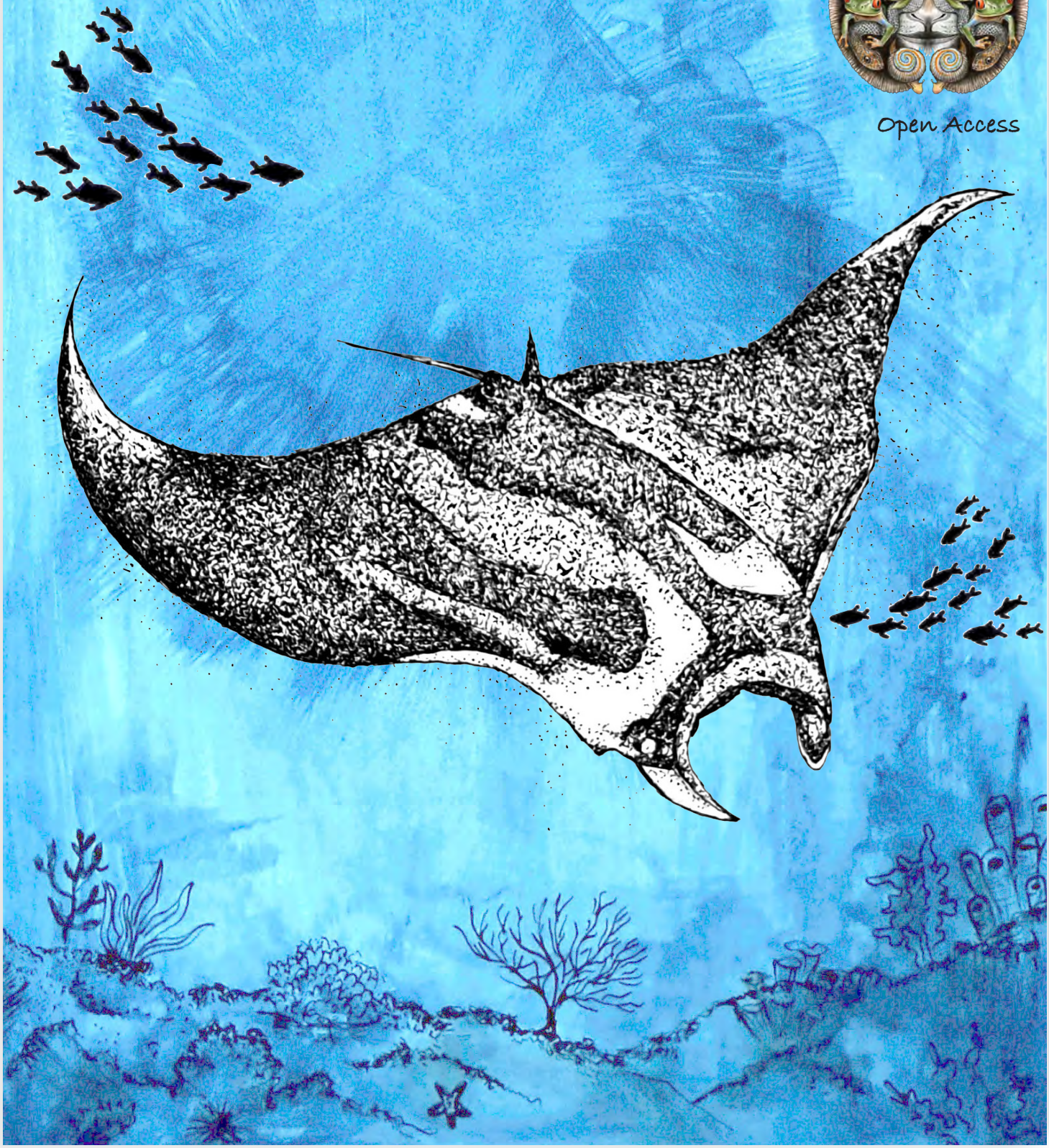

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43/2 Varadarajulu Nagar, 5th Street West, Ganapathy, Coimbatore, Tamil Nadu 641006, India
Registered Office: 3A2 Varadarajulu Nagar, FCI Road, Ganapathy, Coimbatore, Tamil Nadu 641006, India
Ph: +91 9385339863 | www.threatenedtaxa.org
Email: sanjay@threatenedtaxa.org

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Cover: Giant Oceanic Manta Ray *Mobula birostris* in ink on acrylic wash by Elakshi Mahika Molur adapted from scientific illustration by Roger Hall.

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COMMUNICATION

An evaluation of the wetland grass flora of Mizoram, India

S. Pathak

Department of Botany, Mahadevananda Mahavidyalaya, Barrackpore, North 24-Paraganas, West Bengal 700120, India.
spathak.bsi@gmail.com

Abstract: Mizoram, a diminutive state in northeastern India forms a major segment of the Indo-Burma biodiversity hotspots. The wetland grasses in the ecosystem are elements adapted in assorted habitat as one of the primary producers. This present assessment is principally focused to augment and evaluate information on the current status of the aquatic and semi-aquatic grasses from the taxonomic and ecological perspectives from this ecoregion. The paper encompasses the present taxonomic account of the wetland grasses with recent citations, protologue, type, basionym, phenology, growth forms, field status, worldwide distribution and specimens examined. The present investigation revealed the occurrence and distribution of 16 genera including 23 species of wetland grasses from this state. This kind of study always sets the ground for launching in-depth ecological projects for working out the present ecological characteristics and status of the wetlands and their restoration and conservation.

Keywords: Biodiversity, evaluation, flora, grass, hotspot, northeastern India, phenology, Poaceae.

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Author details: Dr. Saumyasree Pathak worked in CNH Botanical Survey of India from 2010 to 2017 on grasses and bamboos of northeastern India and has acquired PhD degree in 2016 from University of Burdwan. Currently working in Mahadevananda Mahavidyalaya as lecturer in Botany. She has been working on the diversity of Poaceae in Mizoram State.

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INTRODUCTION

Wetlands are frequently referred to as the 'Kidneys of landscape' which are the land-water transitional zone between terrestrial and aquatic systems where the water table is usually at or near the surface or the land. The region usually remains covered by marshy, shallow or muddy water. The RAMSAR convention defined wetlands as 'areas of marsh, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters' (Bridgewater & Kim 2021). Wetlands all over the world are threatened directly due to reclamation for development activities, reduction in function due to pollution, water demand, change in hydrologic regime, overexploitation of wetland resources and also due to underlying causes such as market failure, information failure and intervention failure. In this scenario, fundamental knowledge on location, characteristics, functions, values, threats and assessments of status of wetlands are prerequisite for developing sustainable conservation programme for wetlands. They are amongst the most productive ecosystems on earth and any alterations might lead to changes in their bio-physical, socio-economic and climatic conditions.

Grass-dominated communities cover about 24% of the Earth's vegetation (Judd et al. 2002). They not only provide ecosystem services such as water and climate regulation in support of agriculture, biogeochemical cycling, carbon storage, but also form a habitat for a variety of aquatic macro-invertebrates and herbivores (White et al. 2000). Moreover, they have wide ecological amplitude and are able to adapt in diverse habitats as one of the primary producers, as in wetland ecosystems (Mukherjee 1993). The members can acclimatize to far-reaching range of habitations more than sedges and are aptly considered one of the most ecologically successful taxa due to their broad diversification, adaptability and tolerance (Palit et al. 2017).

The graminoids form the fifth largest family of flowering plants (Stevens 2001) but its importance is beyond doubt for it provides to the grasslands which occupy a third of the land's surface (Schantz 1954). They are globally represented by 12,000 species under 780 genera (Christenhusz & Byng 2016) among which India includes 263 genera and 1,291 species (Karthikeyan et al. 1989). There are 18 genera (Sreekumar & Nair 1991) and 350 species (Jain 1986) of grasses which are endemic to India. An exhaustive survey to generate the grass flora of Mizoram amalgamated with literature compilation and herbarium study revealed 64 genera comprising 100 species of grasses. The taxonomic and functional appraisal of the wetland grass flora of this state recorded 16 genera having 23 species which indicates the relevance in ecological management and restoration. This assessment was carried out from 2016 onwards to augment and update information on aquatic and semi-aquatic grass flora from the taxonomic and ecological perspectives. The present commentary includes the current taxonomic status, type, abundance, growth forms, phenology, distribution in India and in the world of the diverse variety of the wetland grass species which are encountered from this geographical area.

MATERIAL AND METHODS

Northeastern India including the state of Mizoram forms a significant segment of the Indo-Burma biodiversity hotspot. The geographical location is between 21º56'–24º31'N & 92º15'–93º26'E having 21,087 km^2 area. The state does not have vast wetland areas or RAMSAR zones however, c. 2.25 ha area forms the wetlands. The major rivers of the state are Chhimtuipui (largest), Tlawng (longest), Tuirial, Teirei, Serlui, Sajek, Tuipui, Kawrpui, & Mengpui and lakes being Palak (largest), Tamdil, Rihdil, & Rengdil (National Wetland Atlas: Mizoram 2010). While studying the grass diversity in Mizoram, special concentration was given to the wetlands because of its intimate aquatic association. Adequate numbers of plant specimens were collected from the wetlands from 2016 onwards, some of which were processed for herbarium preservation at CAL herbarium and the rest were taxonomically worked out. Standard taxonomic methods were applied for description and identification using authentic literature (Bor 1960; Guhabakshi 1984; Baruah & Baruah 2006). The taxonomic account includes current taxonomic citations, protologue, type, basionym, phenology, growth forms, status, field notes, distribution and specimens examined. The genera and species under each genus are arranged alphabetically.

RESULTS AND DISCUSSION

The present survey and investigation revealed the occurrence of 16 genera including 23 species of grasses (Poaceae) from the wetlands of Mizoram.

1 *Brachiaria ramosa* (L.) Stapf in Prain, Fl. Trop. Afr. 9(3): 542–544. 1919.

Type: LINN-80.44.

Basionym: *Panicum ramosum* L., Mant. Pl.: 29. 1767.

Phenology: April to October.

Habitat: Grows beside canals, ditches, muddy areas and marshes.

Growth-form: Graminids.

Status: Common.

Distribution: Tropical regions of the world; Sri Lanka. India: Andaman & Nicobar, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Mizoram, Nagaland, Odisha, Sikkim, Tamil Nadu.

Specimen examined: Mizoram, Mamit District, fringes of the Dampa canal, 466 m, 02.x.2016, S. Pathak 48541 (CAL).

2. *Brachiaria reptans* (L.) Gard. & C.E. Hubb. in W. Hooker's Ic. Pl. sub tab. 3363. 1938.

Type: *P. Browne* s.n.; LINN-80.52, upper specimen.

Basionym: *Panicum reptans* L., Syst. Nat. (ed. 10) 2: 870. 1759.

Phenology: July to March.

Habitat: Grows along edges of river banks.

Growth-form: Graminids.

Status: Common.

Distribution: Pan-tropical parts of the world. India: Andhra Pradesh, Arunachal Pradesh, Assam, Andaman & Nicobar, Bihar, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Mizoram, Nagaland, Odisha, Sikkim, Tamil Nadu, West Bengal.

Specimen examined: Mizoram, Chhimtuipui District, banks of Chhimtuipui River, 846 m, 02.viii.2016, S. Pathak 48548 (CAL).

3. *Coix lacryma-jobi* L., Sp. Pl. (ed. 10) 2: 972. 1753.

Type: INDIA (*Indiis*); *Carl Von Linnaeus*, LINN- 1098.1.

Phenology: April to June.

Habitat: Muddy slope of river banks.

Growth-form: Graminids.

Status: Not common.

Distribution: Native to tropical Asia; currently extensively distributed throughout tropics. India: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Goa, Gujarat, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, and West Bengal.

Specimen examined: Mizoram, Chhimtuipui District, along the banks of Chhimtuipui River, 846 m, 02.vi.2017, S. Pathak 48506 (CAL).

4. *Cynodon dactylon* (L.) Pers., Syn. Pl. 1: 85. 1805.

Type: INDIA: Bombay, sand foreshore, June, 1904, *G. Forrest* 358 (K).

Basionym: *Panicum dactylon* L., Sp. Pl. (ed. 1) 58: 1753.

Phenology: Almost throughout the year.

Habitat: Damp waste lands, the edges of small streams and rivers.

Growth-form: Graminids.

Status: Very common.

Distribution: Cosmopolitan. India: Andaman & Nicobar, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Odisha, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, and West Bengal.

Specimen examined: Mizoram, Aizawl District, beside Turial River, 341 m, 06.x.2016, S. Pathak 48544 (CAL).

5. *Digitaria ciliaris* (Retz.) Koeler., Descr. Gram. 27. 1802.

Type: CHINA: Guangdong, Guangzhou, *Wennerberg* **s.n.**

Basionym: *Panicum ciliare* Retz., Observ. Bot. 4: 16. 1786.

Phenology: April to July.

Habitat: Along shady damp canals, beside ditches and river banks.

Growth-form: Hyperhydate/Helophyte.

Status: Not common.

Distribution: Tropical regions of the world; Africa, Myanmar. India: Andaman & Nicobar, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Tamil Nadu, Tripura, Uttar Pradesh, and West Bengal.

Specimen examined: Mizoram, Mamit District, beside Sajek River, 366 m, 02.v.2017, S. Pathak 48346 (CAL).

6. *Digitaria setigera* Roth, Syst. Veg. (ed. 15) 2: 474. 1817.

Type: INDIA: *Heyne* s.n. (*Holo*: B; *Iso*: K).

Phenology: May to February.

Habitat: Grows beside water flowing channels and

edges of lakes.

Growth-form: Hyperhydate.

Status: Not very common.

Distribution: Australia, China, Myanmar, South America, Thailand, several parts of tropical Asia. India: Assam, Bihar, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, and West Bengal.

Specimen examined: Mizoram, Aizawl District, marshy banks of Tamdil Lake, 1,170 m, 06.vii.2018, S. Pathak 48567 (CAL).

7. *Echinochloa colona* (L.) Link in Hot. Berol. 2: 209. 1833.

Type: JAMAICA: *Browne* s.n., LINN-80.23.

Basionym: *Panicum colonum* L., Syst. Nat. 2(ed. 10): 870. 1759.

Phenology: May to October.

Habitat: Along banks of lakes and muddy forest trails.

Growth-form: Graminids.

Status: Very common.

Distribution: Africa, Asia, Australia, China, New Zealand, South America, Sri Lanka. India: Andaman & Nicobar, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Tamil Nadu, Tripura, Uttar Pradesh, and West Bengal.

Specimen examined: Mizoram, Aizawl District, Rungdil Lake, 1,143 m, 07.vi.2018, S. Pathak 48480 (CAL).

8. *Eleusine coracana* (L.) Gaertn., Fruct. Sem. Pl. 1: 8, pl. 1, f. 11. 1788.

Type: Plukenet, Phytographia pl. 91, f. 5 .1691.

Basionym: *Cynosurus coracanus* L., Syst. Nat. (ed. 10) 2: 875. 1759.

Phenology: March to May.

Habitat: Beside muddy river slopes.

Growth-form: Graminids.

Status: Not common.

Distribution: Tropical and sub tropical zones of the world. India: Arunachal Pradesh, Bihar, Himachal Pradesh, Jammu & Kashmir, Karnataka, Maharashtra, Meghalaya, Mizoram, Nagaland, Odisha, Tamil Nadu, and West Bengal.

Specimen examined: Mizoram, Aizawl District, way to Turial River, 1,112 m, 06.v.2018, S. Pathak 48562 (CAL).

9. *Eragrostis gangetica* (Roxb.) Steud., Syn. Pl. Glumac. 1: 266. 1854.

Type: INDIA: Native of the banks of the Ganges but scarce (*Holo*: K; *Iso*: BM).

Basionym: *Poa gangetica* Roxb., Fl. Ind., (ed.)1: 341. 1820.

Phenology: March to November.

Habitat: Beside muddy banks of lakes.

Growth-form: Graminids.

Status: Common.

Distribution: Asia, Africa, Myanmar, Sri Lanka. India: Andhra Pradesh, Bihar, Daman & Diu, Goa, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Tamil Nadu, Uttar Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, and West Bengal.

Specimen examined: Mizoram, beside muddy slopes of Tamdil Lake, 887 m, 12.x.2017, S. Pathak 48505 (CAL).

10. *Eragrostis tenella* (L) P. Beauv. ex Roem. & Schult., Syst.Veg. 2:576.1817.

Type: Syst. Veg. (Sprengel) 2: 576. 1817.

Basionym: *Poa tenella* L., Sp. Pl. 1: 69. 1753.

Phenology: June to October.

Habitat: Grows in the moist places along rivers.

Growth-form: Graminids.

Status: Common.

Distribution: Asia, China, Malaysia, Sri Lanka. India: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Rajasthan, Tamil Nadu, Tripura, and West Bengal.

Specimen examined: Mizoram, Kolasib District, slopes of Tlawng River, 1,508 m, 02.vii.2011, S. Pathak 48321 (CAL).

11. *Leptochloa chinensis* (L.) Nees, Syll. Pl. Nov. 1: 4. 1824.

Type: INDIA: *Osbeck* s.n. LINN- 87.32.

Basionym: *Poa chinensis* L., Sp. Pl. (ed. 1): 69. 1753.

Phenology: May to September.

Habitat: Grows in moist aquatic areas, along canals and muddy river slopes.

Growth-form: Graminids.

Status: Common.

Distribution: Africa, eastern China, southeastern Asia. India: Andhra Pradesh, Assam, Bihar, Karnataka, Madhya Pradesh, Maharashtra, Mizoram, Nagaland, Odisha, Tamil Nadu, Uttar Pradesh, and West Bengal.

Specimen examined: Mizoram, Kolasib District, along Serlui River, 399 m, 05.ix.2018, S. Pathak 48489 (CAL).

12. *Panicum repens* L., Sp. Pl. (ed. 2) 1: 87. 1762.

Type: *Alstroemer* 2a; LINN-80.74.

Phenology: February to December.

Habitat: Along the fringes of rivers.

Growth-form: Graminids.

Status: Semi-common.

Distribution: Tropical and sub-tropical zones. India: Andhra Pradesh, Assam, Bihar, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Manipur, Meghalaya, Mizoram, Odisha, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, and West Bengal.

Specimen examined: Mizoram, Aizawl District, along banks of Tlawng River, 808 m, 06.xi.2017, S. Pathak 48542 (CAL).

13. *Paspalidium flavidum* (Retz.) A. Camus, Fl. Indo-Chine 7: 419, 1922.

Type: SRI LANKA: *König* s.n. (in Herb. Retzius) (LD).

Basionym: *Panicum flavidum* Retz., Observ. Bot. 4: 15. 1786.

Phenology: May to March.

Habitat: Grows in patches along marshy edges of lakes.

Growth-form: Ephydate/Pleustophyte/Helophyte.

Status: Scarce.

Distribution: Myanmar, Pakistan, Sri Lanka and parts of Asia, Africa. India: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Mizoram, Odisha, Tamil Nadu, Tripura, Uttar Pradesh, and West Bengal.

Specimen examined: Mizoram, Saiha District, marshy edges of Palak lake, 370 m, 06.ix.2017, S. Pathak 48361 (CAL).

14. *Paspalum conjugatum* Bergius in Acta Helv. Phys. Math. 7: 129. t. 8. 1772.

Type: FRENCH GUIANA: Surinam, *F.W. Sieber* 127 (US).

Phenology: May to February.

Habitat: Patches along muddy crevices.

Growth-form: Graminids.

Status: Common.

Distribution: Tropical regions of the world. Africa, Asia, Australia, China, Myanmar, New Zealand, North America. Indi: Andaman & Nicobar, Arunachal Pradesh, Assam, Karnataka, Kerala, Meghalaya, Mizoram, Nagaland, Tamil Nadu, Tripura, and West Bengal.

Specimen examined: Mizoram, Serchhip District, slopes of Tuirihiau falls, 1,179 m, 10.vii.2018, S. Pathak 48360 (CAL).

15. *Paspalum scrobiculatum* L., Mant. Pl. 1: 29. 1767.

Type: INDIA (India oriental), LINN-79.4.

Phenology: Almost throughout the year.

Habitat: Moist fringes of rivers.

Growth-form: Graminids.

Status: Not common.

Distribution: Tropical regions of the world. India: Andaman, Andhra Pradesh, Assam, Arunachal Pradesh, Bihar, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Odisha, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, and West Bengal.

Specimen examined: Mizoram, Lawngtlai District, slopes of Chawngte River, 2,186 m, 05.iv.2011, S. Pathak 48556 (CAL).

16. *Phragmites karka* (Retz.) Trin. ex Steud., Nomencl. Bot. (ed. 2) 1: 144. 1840.

Type: INDIA: *Orientali vulgatissima ad tecta Indorum utitur*, *Konig* s.n. (LD).

Basionym: *Arundo karka* Retz., Observ. Bot. 4: 21. 1786.

Phenology: May to September.

Habitat: Along slopes of river fringes and muddy edges.

Growth-form: Hyperhydate.

Status: Common.

Distribution: Tropical Africa, Polynesia, Sri Lanka to southeastern Asia and northern Australia. India: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Delhi, Gujarat, Himachal Pradesh, Jammu Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Mizoram, Nagaland, Odisha, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh, and West Bengal.

Specimen examined: Mizoram, Aizawl District, slopes of marshy banks of Kaladan River, 2,117 m, 10.ix.2018, S. Pathak 48575 (CAL).

17. *Saccharum spontaneum* L., Mant. Pl. 2:183. 1771.

Type: INDIA: Kerala, Malabar (*Malabariae aquosis*), *Koenig* s.n., LINN-77.1.

Phenology: May to September.

Habitat: Along the fringes of rivers.

Growth-form: Graminids.

Status: Not common.

Distribution: Africa, Asia, Australia, China, Europe. India: Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Mizoram, Odisha, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, and West Bengal.

Specimen examined: Mizoram, Aizawl District, slopes

of marshy banks of Kaladan River, 2,110 m, 10.ix.2018, S. Pathak 48443 (CAL).

18. *Sacciolepis indica* (L.) Chase in Proc. Biol. Soc. Wash. 21:8, 1908.

Type: SRI LANKA: Sabaraganamuwa Province, Ratnapura District, 22.x.1974, *Davidse & D.B. Sumithraarachehi* 7871 (K).

Basionym: *Aira indica* L., Sp. Pl. 1: 63, 1231, *in errata* after index. 1753.

Phenology: May to November.

Habitat: Along muddy river banks.

Growth-form: Graminids.

Status: Common.

Distribution: Africa, Asia, America, Australia, Brazil, China, Myanmar, New Zealand, Sri Lanka. India: Assam, Arunachal Pradesh, Bihar, Karnataka, Madhya Pradesh, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Tripura, Uttar Pradesh, and West Bengal.

Specimen examined: Mizoram, Kolasib District, slopes of Tlawng River, 1,598 m, 02.vii.2011, S. Pathak 48493 (CAL).

19. *Setaria pumila* (Poir.) Roem. & Schult., Syst. Veg. ed. 15(2): 891. 1817.

Type: Unknown locality (probably FRANCE or NORTH AFRICA), *Desfontaines* s.n. (P).

Basionym: *Panicum pumilum* Poir., Encycl. Suppl. 4(1): 273. 1816.

Phenology: Late February to September.

Habitat: Along the fringes and marshes of the lakes.

Growth-form: Helophyte/ Ephydate.

Status: Common.

Distribution: Tropical regions of the world (Kabeer & Nair, 2009), Bhutan, France. India: Sikkim, Tamil Nadu, West Bengal, and Mizoram (present study).

Specimen examined: Mizoram, Champhai District, on the banks of Rihdil Lake near Zokhawthar, 1,678 m, 16.vi.2016, S. Pathak 48553 (CAL).

20. *Setaria verticillata* (L.) P. Beauv., Ess. Agrostogr. 51, 171. 1812.

Type: EUROPE (*Europa australi & Oriente*).

Basionym: *Panicum verticillatum* L., Sp. Pl. (ed. 2) 1: 82. 1762.

Phenology: Almost throughout the year.

Habitat: Muddy banks of rivers.

Growth-form: Helophyte/ Ephydate.

Status: Common.

Distribution: Tropical regions of the world; Africa, Pakistan, Sri Lanka, introduced in America. India: Assam, Bihar, Madhya Pradesh, Meghalaya, Mizoram, Sikkim, Tamil Nadu, and West Bengal.

Specimen examined: Mizoram, Chhimtuipui District, slopes of Chhimtuipui River, 846 m, 02.viii.2017, S. Pathak 48559 (CAL).

21. *Setaria viridis* (L.) Peauv., Ess. Agrostogr. 51, 171, 178. 1812.

Type: EUROPE (*Europa australi*).

Basionym: *Panicum viride* L., Syst. Nat. (ed. 10) 2: 670. 1759.

Phenology: Almost throughout the year.

Habitat: Along the edges of lakes and streams.

Growth-form: Helophyte/ Ephydate.

Status: Common.

Distribution: China, Eurasia, plateau of Tibet, c. 4,000 m; cooler parts of the world. India: Assam, Arunachal Pradesh, Meghalaya, Mizoram, Nagaland, and West Bengal.

Specimen examined: Mizoram, Saiha District, slopes and edges of Palak Lake, 370 m, 06.ix.2017, S. Pathak 48537 (CAL).

22. *Sporobolus diandrus* (Retz.) P. Beauv., Ess. Agrostogr. 26, 147, 178. 1812.

Type: INDIA: *Koenig* s.n. (*Holo*: LD; *Iso*: BM, C, K, L, NSW).

Basionym: *Agrostis diandra* Retz., Observ. Bot. 5: 19. 1789.

Phenology: April to August.

Habitat: Marshes of the river banks.

Growth-form: Helophyte/Ephydate.

Status: Very Common.

Distribution: Cosmopolitan in the tropical and sub tropical regions; Mynmar, Sri Lanka extending up to Australia. India: Arunachal Pradesh, Assam, Bihar, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Tamil Nadu, Uttar Pradesh, and West Bengal.

Specimen examined: Mizoram, Lunglei district, marshes of Deh River, 1,009 m, 07.x.2018, S. Pathak 48501 (CAL).

23. *Sporobolus fertilis* (Steud.) Clayton in Kew Bull. 19: 291. 1965.

Type: JAPAN: *Burger* s.n. (*Isolecto*: K, P, L).

Basionym: *Agrostis fertilis* Steud., Syn. Pl. Glumac. 1: 170. 1854.

Phenology: April to December.

Habitat: Along river fringes and muddy slopes.

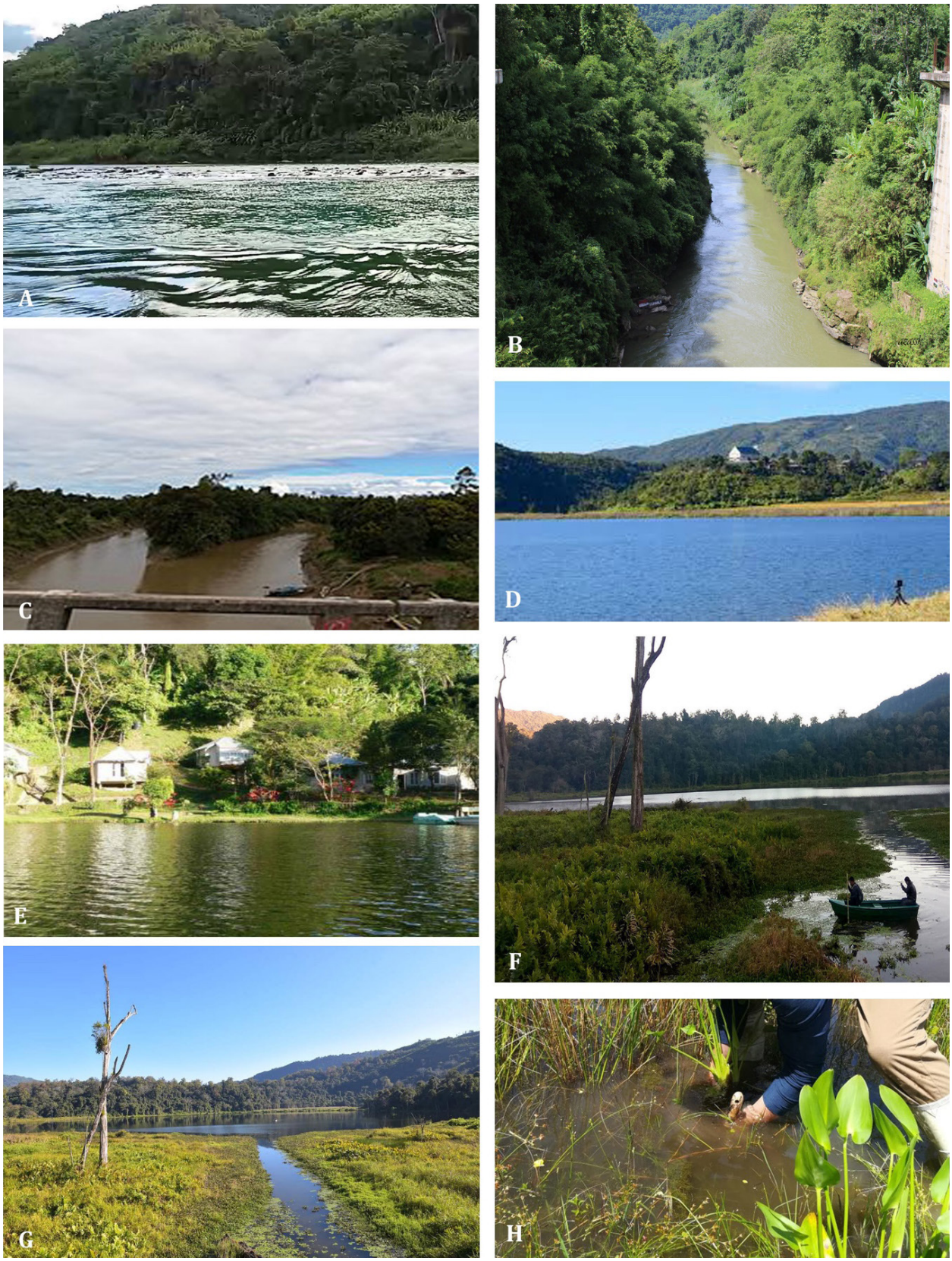

Image 1. A—Chhimtuipui River | B—Tlawng River | C—Sajek River | D—Rih Lake | E—Tamdil Lake | F—Palak Lake | G—Pala Lake | H—Plant collection. © S. Pathak.

Growth-form: Helophyte/ Ephydate.

Status: Common.

Distribution: Asia, Australia, China. India: Andaman, Andhra Pradesh, Arunachal Pradesh, Bihar, Madhya Pradesh, Meghalaya, Mizoram, Nagaland, Odisha, Tamil Nadu, Uttar Pradesh, and West Bengal.

Specimen examined: Mizoram, Lunglei District, marshes of Deh River, 1,009 m, 07.x.2018, S. Pathak 48396 (CAL).

In the current study, 16 genera having 23 species under family Poaceae (grasses) from the various wetlands of Mizoram were encountered. They were worked out taxonomically, identified and preserved. The study revealed that, the diversity of the wetland grasses observed in the concerned geographical area remained quite dissimilar to other places of India. The assemblage of the grasses in the wetlands significantly altered in accordance with the availability of soil and intensity of light. Moreover, many species exhibited a wide range of tolerance to the variations in the altitude, wind velocity and intensity of submergence. The species also showed longer culms where the height of water was higher than those in the marshy zones. Furthermore, the plant height gradually decreased with the increase in altitude. In addition to the above, the comparative account of the wetland grass species assemblage indicated variations in the richness and the abundance in accordance with the soil and slope pattern. The extent of species range and plant assemblage in close proximity of large water bodies was considerably higher than that of forested wetlands. Thus, the pattern of the assemblage in the wetlands depends on the water regime, soil nutrient content, altitude and use as observed in varied geographical locations.

CONCLUSION

The present study based on 23 wetlands grasses is purely a taxonomic approach with notes on location, type, growth form, phenology, and distribution. Extending the observations to the present context, continuous monitoring of the wetlands should be continued to retrieve the variations in the distribution of the wetland grasses and associated changes in the community structure. These kinds of revisions are always important for the studies of ecological characteristics of the wetlands, their restoration and conservation.

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