

An Introduction to Biological Descriptions

Kevin Thiele
Western Australian Herbarium
Department of Environment
and Conservation



The currency of biodiversity data:

- Taxa
- Specimens and observations
- Descriptions
- Images



Types of descriptive data:

- Natural-language descriptions
- Other taxon-descriptive notes
- Identification keys
- Data matrices (e.g. Lucid, DELTA, NEXUS



Unstructured:

<Description>Trees or shrubs, some with prostrate stems. Leaves alternate, sometimes whorled. Flowers many in a dense cylindrical, ovoid or spherical inflorescence, in 3 species reduced and head-like, with a basal involucre of narrow, usually hairy bracts that commonly fall by anthesis; flowers in pairs, each flower subtended by a bract and each pair by a larger 'common bract'. Perianth of 4 ±equal tepals. Pistil usually wiry; pollen presenter scarcely delimited to markedly modified, commonly ribbed. Ovules 2. Fruit a woody follicle. Seeds 1 or 2, with an intermediary 2-winged plate of similar outline and size. Cotyledons with acute basal auricles.

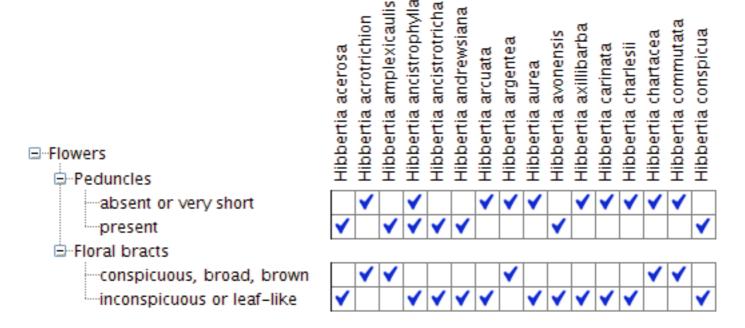


Semi-structured:

Description> **Habit**>Trees or shrubs, some with prostrate stems.</hd> **Leaves**>Leaves alternate, sometimes whorled.</Leaves> <Flowers>Flowers many in a dense cylindrical, ovoid or spherical inflorescence, in 3 species reduced and head-like, with a basal involucre of narrow, usually hairy bracts that commonly fall by anthesis; flowers in pairs, each flower subtended by a bract and each pair by a larger 'common bract'. Perianth of 4 ±equal tepals. Pistil usually wiry; pollen presenter scarcely delimited to markedly modified, commonly ribbed. Ovules 2. **/Flowers><Fruit>**Fruit a woody follicle. Seeds 1 or 2, with an intermediary 2-winged plate of similar outline and size. **</Fruit> <Cotyledons>**Cotyledons with acute basal auricles. </Cotyledons></Description>



Structured:





Curiously semi-structured:

Key to the genus Hibbertia in Western Australia

- 1. Stamens all on one side of 2 carpels (sometimes some staminodes occur opposite the stamens)
- 2. Flowers in a several-flowered spike
- **3.** Sepals, bracts and young leaves with fairly long coarse simple hairs, sometimes also with underlying minute stellate hairs

- 2. Flowers solitary or clustered in the leaf axils
- 5. Flowers stalked
- **6.** Carpels hairy or scaly
 - 7. Leaves strongly pungent or gradually tapered and spine-tipped
 - 8. Sepals with scales or scale-like stellate hairs

 - **9.** Leaf with straight spiny tip



SDD (Structure of Descriptive Data) Design Brief

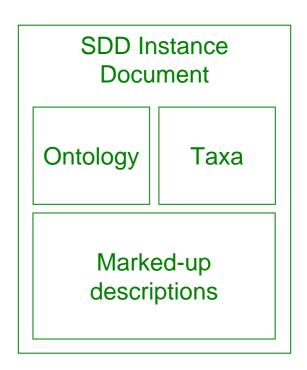
- Exchange standard (DELTA, Lucid etc)
- Superset of all prior "standards"
- Capture all forms of descriptive data
- Support progressive increase in structure
- XML Schema



Capturing structure in descriptive data

An SDD instance document comprises:

- An ontology
- A set of objects to describe
- Markup





Progressive markup

<Description>Trees or shrubs, some with prostrate stems.
Leaves simple, alternate, sometimes whorled. Flowers many in a dense cylindrical, ovoid or spherical inflorescence, in 3 species reduced and head-like, with a basal involucre of narrow, usually hairy bracts that commonly fall by anthesis; flowers in pairs, each flower subtended by a bract and each pair by a larger 'common bract'. Perianth of 4 ±equal tepals. Pistil usually wiry; pollen presenter scarcely delimited to markedly modified, commonly ribbed. Ovules 2. Fruit a woody follicle. Seeds 1 or 2, with an intermediary 2-winged plate of similar outline and size. Cotyledons with acute basal auricles.
/Description>



Progressive markup

<Description>Trees or shrubs, some with prostrate stems.
<Leaves>Leaves simple, alternate, sometimes
whorled.
/Leaves> Flowers many in a dense cylindrical,
ovoid or spherical inflorescence, in 3 species reduced and
head-like, with a basal involucre of narrow, usually hairy
bracts that commonly fall by anthesis; flowers in pairs, each
flower subtended by a bract and each pair by a larger
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size. Cotyledons with acute basal auricles.
/Description>



Progressive markup

<Description>Trees or shrubs, some with prostrate stems. <Leaves>Leaves simple, <Leaf_arrangement>alternate, sometimes whorled. </Leaf_arrangement></Leaves> Flowers many in a dense cylindrical, ovoid or spherical inflorescence, in 3 species reduced and head-like, with a basal involucre of narrow, usually hairy bracts that commonly fall by anthesis; flowers in pairs, each flower subtended by a bract and each pair by a larger 'common bract'. Perianth of 4 ±equal tepals. Pistil usually wiry; pollen presenter scarcely delimited to markedly modified, commonly ribbed. Ovules 2. Fruit a woody follicle. Seeds 1 or 2, with an intermediary 2winged plate of similar outline and size. Cotyledons with acute basal auricles.</Description>



SDD Futures – Natural-language processing

You are mistaken, Mr. Darcy, if you supposed that the mode of your declaration affected me in any other way, than as it spared the concern which I might have felt in refusing you, had you behaved in a more gentlemanlike manner.



SDD Futures – Natural-language processing

Leaves ovate to ovate-elliptic, 2-5 cm long, acute, serrate; stipules present, narrowly triangular. Flowers 5-partite, rotate, blue with white spots; corolla lobes narrowly ovate; stamens 5 with a prominent dark gland on the connective.

Support for automated markup



SDD Futures – From exchange standard to collaboration platform

There is a great need for standardised ontologies (characters/states) throughout life.

- Rigorous definitions
- Normativity
- Collaboration platform support





Thanks

The TDWG SDD standard is a collaboration that has involved many people over many years. Principal Working Group leaders are Gregor Hagedorn and Bob Morris

