

Exploring First Nations knowledges of celestial bodies

Warning – Aboriginal and Torres Strait Islander teachers and students are advised that this curriculum resource may contain images, voices or names of deceased people.

Glossary

ancestral: relating to ancestors, or people from our families who lived before us.

astronomy: the study of celestial bodies.

celestial bodies: natural objects outside of the Earth's atmosphere (e.g. planets, stars or nebulae). *Celestial* means 'relating to heaven'.

colonising: the act of one country taking over another; the invaded country is called a 'colony.'

colonists: inhabitants of a colony.

Country: a place that First Nations Peoples belong to as well as a belief system. It's a relationship with all living things that are part of a landscape and includes everything within that landscape; rocks, trees, creeks, animals, plants, medicines, sacred sites, songs, stories, dance and art, as well as all people, ancestral spirits and community connections: past, present and future. Country sustains First Nations Peoples and must be cared for and respected by and for every generation that is and will be.

Dreaming: the worldview of Australia's First Nations societies that explains the connections between all people and all things through all times.

First Nations people: Aboriginal and/or Torres Strait Islander people.

initiation ceremonies: gatherings and rituals that celebrate and welcome young people as adult members of the community.

sky stories: stories used to transfer knowledge associated with the stars that guide morals, navigation, hunting and gathering seasons and other cultural information.

songlines: a series of songs that map a path across the land or sky marking the route followed by ancestral spirits; a way to remember information about place, ceremony, laws and customs.

star maps: visual maps in the sky that provide routes and directions for land and/or sea navigation.

waypoints: signals for travellers on a journey to stop, turn or change direction, or where food, water or medicine is located.

First Nations astronomy

For thousands of years, First Nations people have studied the night skies to predict weather patterns, navigate seas and rivers and understand the seasonal behaviour of plants and animals (Hamacher et al. 2019). First Nations **astronomy** knowledges have always been an active and integral part of First Nations Creation stories, and these knowledges have been passed down through generations through songs and stories. At the same time, these songs and stories were used to teach future generations fundamental laws and moral values (Norris and Hamacher 2014).

When the British began **colonising** Australia in 1788, there were around 300 different First Nations language groups (Norris and Hamacher 2014). These First Nations groups used the **ancestral** names for **celestial bodies** – the sun, moon, planets and constellations – in their stories and songs (Hamacher et al. 2019). Many First Nations language groups share the common idea that the world was created in **Dreaming**, by ancestral spirits seen on **Country** and in the sky (Norris and Hamacher 2014).

The origin of the universe: Dreaming stories

First Nations astronomy knowledges vary across different language groups as each group's knowledge developed in response to the local environment and landscape (Clarke 2015; Hamacher et al. 2019). Individual groups have transferred their unique knowledges to the next generation through initiation **ceremonies**, dances and stories, including Dreaming stories.

The words *Dreaming* and *Dreamtime* have never been a direct translation of a First Nations word as the English language doesn't have an equivalent to express the complex concept. Both terms carry significant historical colonial baggage and erase the complexities of the original concept and the diversity across the many different First Nations languages and cultures. The term *Dreamtime* is particularly problematic, as it promotes the misunderstanding that Dreaming is something that occurred at the so-called 'dawn of time'. In reality it embraces all time – past, present and future (adapted from Australians Together 2020, p. 19). Because of this, *Dreaming* is the preferred term to use.

Dreaming is when life was created, how all living things were made and why they exist in certain places. Dreaming also commands the rules and ways of living. It relays lessons to the listener about marriage, communication, respect and hospitality. Dreaming stories convey the cultural practices First Nations people are expected to live by within their cultures (Nicholls 2014).

First Nations astronomers

There's a new awakening worldwide to understanding and acknowledging First Nations astronomy (Hamacher et al. 2019). **Sky stories** from multiple First Nations groups are being researched and documented by Australian universities (Betts 2018). First Nations astronomers like Karlie Noon and Kirsten Banks are making significant steps to break down barriers between First Nations astronomy knowledges and astronomy of the Babylonian, Greek and Renaissance eras.

The use of First Nations Peoples' **star maps** in the design of road networks across this country has been recognised through naming highways, such as the Kamilaroi Highway, which runs through New South Wales. Patterns in the stars can be used as a memory aid to teach **waypoints** between destinations. **Songlines** were created by Elders to remember the routes and times of the year that different First Nations people groups would travel across the continent to reach ceremonial places, joint ceremonies and festivals (Fuller 2016).

First Nations people from the Torres Strait Islands use 'stellar scintillation' (star twinkling) to predict the weather and seasonal changes. By reading the stars, hunters predict the expected weather for the next day, and by observing lightning and cloud formation predict the direction that the wind will be blowing. The farmer can predict the changes of season by keeping an eye on the ground for changes in the amount of dew of the plants, the sky at night for the movement of constellations and the migration patterns of animals (Hamacher et al. 2019).

Emu in the Sky

The Emu in the Sky constellation stretches across the Milky Way, starting near the Southern Cross and stretching the length of the galaxy, with the emu's head a dark patch that is seen in Figure 1 (Steffens 2009). For First Nations Peoples, in some instances, the dark patches help to form a constellation. The 'emu' consists of the dark patches within the Milky Way, not the stars (Norris and Hamacher 2014).

The knowledges of the Emu in the Sky are an important cultural link between the behaviour of celestial bodies and animals and resources on Country (Fuller et al. 2019).

Because First Nations cultures use oral transmission of knowledges, it's essential to sustain cultural ceremonies, stories and dances to pass down information (Fuller et al. 2019; Norris and Hamacher 2014; Steffens 2009).

Impacts of the Waterloo Bay cliffside massacre

British colonisation severely impacted First Nations astronomy culture, especially in areas of southern Australia (Norris and Hamacher 2014).

Annie Hastwell from ABC Radio tells the story of Waterloo Bay, on the west coast of South Australia, when in 1849, Aboriginals and **colonists** became hostile towards each other due to unrest over land; the tit-for-tat murders resulted in about 70 Aboriginal and colonist deaths during the 1840s and culminated in about 20 Aboriginals being hounded over the cliffs. For the past 170 years, Wirangu people have avoided the Elliston and Streaky Bay area where the massacre happened until the resurrection of sculptures in 2017, acknowledging the First Nations Peoples massacre (Hastwell 2019).

Wirangu Elder, Veda Betts, explains how acknowledging the massacre has made people feel more accepted (Hastwell 2019).

Her daughter, Susie Betts, says "there has been reconciliation, healing" (ABC 2020, 02:00 to 02:10). Susie tells how she's reconnecting with Country and her People's story of The Seven Sisters constellation (ABC 2020). She's actively gathering the ancestral cultural knowledges of The Seven Sisters to encourage connection to Country and conciliation within local and regional communities (Betts 2018). The journey of The Seven Sisters makes up the star cluster known as the Pleiades and plays an essential role in Creation stories of some First Nations Peoples, similar to the Emu in the Sky's role as a 'calendar' (Norris and Hamacher 2014).

Astronomy in your community

Examples of opportunities to connect with cultural contributions that First Nations people have made to the scientific field of astronomy are listed below. To connect with these contributions you could:

- Find out if a planetarium close to you has a First Nations night sky exhibition. Plan an excursion to go and listen to an Elder explain the skyscape.
- Share a sky story with your family. Find out which First Nations people the story is from and the central theme of the story.
- Stay up one night and try to spot some of the stars and constellations, from the stories you've learnt about, in the night sky.
- Find out if an Elder from a First Nations group, or a representative from a First Nations cultural centre, will come and tell you more about their sky stories. Invite the person to your school, listen to their sky stories, and ask questions about the importance of astronomy in their cultures. Be sure to remunerate Elders for their time and expertise.



Figure 1: The Emu in the Sky as it stretches across the Milky Way.

Source: Ray Norris (2007) *Kuringai Emu in the Sky*, [photograph], p. 5. © Barnaby Norris and Ray Norris. Reproduced with permission.

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Acknowledgements

Image sources

Figure 1: Norris R (2007) *Kuringai Emu in the Sky* [photograph], in '[The Emu Sky Knowledge of the Kamilaroi and Euahlayi Peoples](#)', *Journal of Astronomical History and Heritage* 17(2):1–13. © Barnaby Norris and Ray Norris. Reproduced with permission.